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ABSTRACT

This report, organized into two parts, presents the needs assessment study conducted for the state of Texas. The first section describes Phase One of the study which identified the goals and criteria pertaining to each of the NET target populations, namely: children, parents, educators, food service personnel, and administrators. The second part presents the second phase which included the collection of available data, the development of data collection instruments and procedures, and use of the Delphi technique to provide effective feedback from a group of experts interested in nutrition education. The main body of this report is comprised of appendixes including: Delphi panel names; sample selection; field testing; instruments developed for grades 3, 5, 8, and 11; observed food intake and health instruments developed for children; scholastic achievement forms; instruments developed for parents and/or guardians, educators, and food service personnel; menu and dietary compliance operational practices instruments developed for food service operation; instrument developed for administrators; forms for securing required approvals; procedures; and team training for data collection. (Contains 92 references.) (LL)

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ED 372 050

FINAL ANNUAL REPORT

OF

NUTRITION EDUCATION AND TRAINING NEEDS ASSESSMENT PROJECT

FOR

FEDERAL FISCAL YEAR 1993

TEXAS

NUTRITION EDUCATION & TRAINING

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NUTRITION EDUCATION AND TRAINING NEEDS IN TEXAS

Mahassen Ahmad, Ph.D., Project Director

Major Project Responsibilities

STAGE I: K-12 SCHOOL CHILDREN

First Phase: Setting Goals and Criteria	Ruth Martin, Ph.D. Linda Hoover, Ph.D., R.D.
Second Phase: Collecting Available Data and Developing Data Collection Procedures and Instruments	
A. Available data collection	Ruth Martin, Ph.D.
B. Unavailable data collection	
1) Sample selection	William Lan, Ph.D.
2) Instrument design	
a. Demographics	Ruth Martin, Ph.D.
b. Nutrition knowledge and attitudes	
(1) children and parents	Elizabeth Fox, Ph.D., R.D., L.D. Ruth Martin, Ph.D. Linda Hoover, Ph.D.
(2) administrators, educators, and food service personnel	Ruth Martin, Ph.D. Linda Hoover, Ph.D., R.D. Elizabeth Fox, Ph.D., R.D., L.D. Karen Perkins, M.S., R.D.
c. Nutrition behavior	Elizabeth Fox, Ph.D., R.D., L.D.
(1) Children, parents, and educators	Linda Hoover, Ph.D., R.D. Kathy Anderson
d. Food service management knowledge	Linda Hoover, Ph.D., R.D. Karen Perkins, M.S., R.D.
e. Food service practices	Linda Hoover, Ph.D., R.D. Kathy Anderson
f. Scholastic achievement	Ruth Martin, Ph.D.
g. NET coordination and support	Ruth Martin, Ph.D.
h. Health information and physical fitness	James Chappell, M.D.
i. Data analysis	William Lan, Ph.D.
3) Procedures development	Ruth Martin, Ph.D. Linda Hoover, Ph.D., R.D. James Chappell, M.D.

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AN ASSESSMENT OF NUTRITION EDUCATION AND TRAINING NEEDS IN TEXAS

FIRST PHASE: SETTING GOALS AND CRITERIA

Literature Review

A thorough search for literature sources on nutrition education was conducted using computers at the libraries at Texas Tech University and Texas Tech University Health Sciences Center. Identification of appropriate paper, the indexes, CD-ROM indexes and on-line products were made in consultation with the reference librarians. In addition, assistance was provided by the Nutrition Education and Training Library in Austin, Texas and the United States Department of Agriculture (Food and Nutrition) Library, Bethesda, Maryland.

Policies and Regulations

Although research on nutrition education has been conducted on school children since the turn of the century, limited productivity was evident until the 1970s. The status of research productivity changed when Congress passed Public Law 95-166 and established the Nutrition Education and Training Program (NET) in November 1977. The NET Program supports the nutrition education and training segment of the Child Nutrition Programs of the U.S. Department of Agriculture.

The regulations for this legislation authorizes the Secretary of Agriculture to provide for: a) the nutritional training of educational and food service personnel; b) the food service management training of school food service personnel; and c) the conduct of nutrition education activities in schools and child care facilities (1).

According to the regulations, each state agency is to conduct an ongoing needs assessment whereby the data base will be utilized in formulating the state plan for each fiscal year. Further, the needs assessment is an ongoing process which identifies the discrepancies between what should be and what is. This assessment will include the following:

> a) children, teachers, and food service personnel in need of nutrition education and training, b) materials which are currently available for nutrition education and training programs, c) available documentation of the competencies of teachers in the area of nutrition education, d) available documentation of the competencies of food service personnel, e) problems encountered by schools and institutions in

procuring nutritious food economically and in preparing nutritious appetizing meals and areas where training can assist in alleviating these problems, f) problems teachers encounter in conducting effective nutrition education activites and areas where inservice training or materials can assist in alleviating these problems, g) problems in dietary habits of children and areas where nutrition education may assist in positive changes, h) problems in coordinating the nutrition education by teachers with the meal preparation and activities of the food service facility and areas where training might alleviate these problems (1, [PL 95-166 Subpart A 227.36]).

Thus, the NET regulations for each state require that a needs assessment be an ongoing process carried out with students, teachers, and food service personnel of public or private schools. The needs assessment is crucial in identifying the nutrition and training needs for the state for each year. All populations are eligible to participate in activities and request services from the NET Program. However, with current funding, it is impossible for NET to serve everyone.

Curricula and Guidelines

Since the implementation of the Nutrition Education and Training legislation and the publication of the Dietary Guidelines for Americans (2), program emphasis has focused on influencing children's nutrition knowledge, attitudes, and practices. Children need to learn the importance of a healthy lifestyle which can be facilitated by nutrition education.

According to Tyler's (3) classic curriculum model, curriculum should reflect the needs of students, society, and subject matter specialists. To assess the needs of students and society, nutrition monitoring is critical. Nutrition monitoring data are used to (4):

- Identify high-risk groups and locations that need food assistance and nutrition intervention programs;
- Assess progress toward achieving the nutrition and related health objectives in **Healthy People 2000** (5);
- Monitor food production and marketing;
- Provide information about the relationships between diet, nutrition and disease, such as in The Surgeon General's Report on Nutrition and Health, (6,5);
- Evaluate food assistance and nutrition intervention programs;

- Help evaluate issues for fortification, safety, and labeling of the food supply;
- Characterize relationships between knowledge, attitudes and health behavior;
- Evaluate changes in agricultural policy that may affect the healthfulness of the U.S. food supply; and
- Contribute to the development of the Dietary Guidelines for Americans (2) and the Recommended Dietary Allowances (7).

Several national reports on diet, nutrition and health have been published in recent years. Included in these publications are The Surgeon General's Report on Nutrition and Health (6), Healthy People 2000 (5), Diet and Health: Implications for Reducing Chronic Disease Risk (7), Improving America's Diet and Health: From Recommendations to Action (8), The Relationship between Nutrition and Learning: A School Employee's Guide to Information and Action (9), and the Kellogg Children's Nutrition Survey (10). A common thrust of these reports is the dire need for effective nutrition education for children.

Nutrition education programs include a variety of print and non-print materials that are developed or can be accessed. Two major collections of state developed curricula are located at the Pennsylvania State Nutrition Center and the National Agricultural Library; this public service is supported by the U.S. Department of Agriculture. The ultimate goal of nutrition education, including curricula and training materials, is to improve the nutritional and physical fitness/health status of children wherein the nutrition concepts may be communicated through the parents, teachers, and food service personnel.

Selected nutrition education programs and curricula, implemented following the initiation of the NET Program, will be discussed. Several nutrition education programs, conducted in **Nebraska and New York** in the 1980s, were implemented in grades 1 - 6. The NET curriculum in Nebraska focused on familiarity with fruits and vegetables, positive attitudes towards the school lunch, and functions of nutrients, food sources and advertising (11). In New York, the nutrition education content varied among schools due to the use of a mini-grant system (12).

Nutrition in a Changing World, a curriculum based on a national survey of nutrition educators, was implemented in all grade levels (elementary, junior high, and senior high) in Pennsylvania from 1982-1988 (13-16). At the elementary level, activities in the school cafeteria accompanied the classroom learning; in junior high and senior high, the curricula were tailored for students in home economics and health classes. The concepts were designed for the application of nutrition concepts which would be interesting to these adolescents.

Some of the curricula development has been sponsored by independent educational agencies and other efforts have been supported by national associations such as the American Cancer Society, the American Heart Association, and the National Dairy Council.

Unique features of the curriculum **Food...Your Choice** included the integration of nutrition concepts in all subject areas and learning activities designed for students in all grades (17). The curriculum was tested nationwide at the elementary level in 1978-79 and in high schools from 1982-85 (18, 19).

In recent years a number of nutrition education curricula, developed at the state level, have been aimed at reducing chronic disease risk and facilitating healthy habits. State nutrition curriculum efforts include **Hearty Heart and Friends** for grades 3 and 4, a part of the **Minnesota Heart Health Program** (20). In addition, **Go for Health** developed for grades 3 and 4, (21) **Great Sensations Study** for grades 10-12 (22), and the **Adolescent Heart Health** (23) curricula have been written in an effort to maximize enhanced nutrition and long-range eating habits.

Included in the health-related programs is **Know Your Body**, a year-long curriculum designed for grades K through 7 (24). The curriculum was implemented in New York, Washington, D.C., and Los Angeles (25, 26).

According to the U.S. Department of Agriculture's publication prepared by Daniels, Ford, Lilly, Marsden and Poolton (27), state adopted or developed curricula for nutrition education are available in few (nine) states. An example of a state developed curriculum is **Education for Self-responsibility IV: Nutrition Education** (28). This guide was developed by the Home Economics Curriculum Center, Texas Tech University, for students from prekindergarten through 12th grade. The curriculum was designed for integration in all subject areas. The curriculum guides were disseminated to all school districts in Texas in 1992.

In a survey of 95 elementary school teachers in Tennessee (29), five nutrition education curricula were used the most: **Growing Healthy** (30), **Food...Your Choice** (17), **Getting to Know Your Heart** (31,32), **Treasure Chest** (33) and **Know Your Body Materials** (34,24). While teachers commented that they used nutrition curricula from a variety of sources, they also relied heavily on teacher-made materials. This finding supports the fact that teachers have limited materials and resources for educational purposes.

The relationship of diet, nutrition, and health is well-founded by research. This knowledge makes it evident that more education is needed to motivate children to learn healthy food habits. To maximize the goal of successful children's education, several recommendations are: to develop well-trained teachers and school food service personnel; to develop effective nutrition education training materials and methods, and to continue to research effective support for the development of food service management competencies.

Related Research

Nutritional Status of Children

Over the past half-century, the health profile of American children has shifted from the threat of major infectious diseases. Today, children of low socioeconomic status may face such health threats as mental retardation, learning disorders, emotional and behavioral problems, and vision and speech impairments (5). Childhood is the opportune time for healthy development and to establish lifetime-diet and exercise patterns.

Currently, many young people face problems such as alcohol and drug abuse and unwanted pregnancy. Other disparities may include low socioeconomic status and being a minority. Low socioeconomic status (low income) includes "family groups with individuals who have poorly paid jobs or are unemployed, families living in substandard housing, and families more likely to have only a single parent in residence. Nearly one of every eight Americans lives in a family with an income below the Federal poverty level" (5). Low income contributes to increased chances of chronic disease and traumatic death.

Minority groups in the United States include, in rank order of highest to lowest, African Americans, Hispanic Americans, Asian and Pacific Islanders, and American Indians and Alaska Natives. Almost 1000 American Indian school children ages 5-18 years were surveyed for the collection of base-line data for height and weight in 1990. The National Center for Health Statistics has sponsored other studies designed to evaluate the health and nutritional status of various populations including Hispanic children and those experiencing severe pediatric undernutrition (35). There is a disparity of health problems associated with these minority groups; the inequity of socioeconomic status is evident with many minority populations in the United States (5).

Nutrition Education

In a review of major school-based nutrition education studies carried out during the 1980s, Contento, Manning and Shannon (36) found that two broad approaches to nutrition education were followed. The first approach was a general knowledge-attitude-behavior while the second approach targeted behavioral change programs based on social learning theory. Behavior change can be enhanced with a parent component for younger children through materials mailed home (worksheets and activities to do together) and peer involvement for older students.

Numerous studies have been conducted on the needs of children and the effectiveness of nutrition education. Following the study of numerous nutrition education publications, Johnson and Johnson stated, "nutrition education is qualitatively more complex than are many other subject areas taught in schools. Besides the short-term mastery of facts and information, nutrition programs have to be concerned with the achievement of a wide variety of short-term and long-term goals" (37).

Some of the research highlights of nutrition education with children studies include findings from the School Health Education Evaluation conducted in the mid 1980s. Connell, Turner, & Manson (38), studied over 30,000 children (grades 4 - 7) in 1,071 classrooms representing 20 states with four main evaluation results: knowledge, attitude, behavior, and program-specific knowledge. Students in health education classrooms rated higher on self-reported health skills and behavior subscores than other students.

In a survey of NET programs during the 1980s, positive effects were found on intellectual outcomes whereas the attitude results were generally positive although inconsistent. The success of NET programs on nutrition practice was limited. These results may be enhanced if the programs were longer than 10-15 hours of teaching over a 3-15 week period (39). Connell, Turner, and Manson (38) reported similar results: 50 classroom hours are necessary to acquire stability in knowledge, attitudes, and behavior. Also, it is beneficial to have nutrition concepts sequenced and reinforced throughout the curriculum.

Effective nutrition is needed to convey the teaching of positive attitudes, nutrition knowledge, and healthy practices to maintain a physically active lifestyle from childhood through adolescence, and throughout one's life. The improvement of the status of physical fitness and health of American children will take a concerted effort with a broad variety of strategies and interventions backed by many interested parties.

The Role of Educators/Teachers

In the study on school-based nutrition education, findings indicate that "all states have either mandates or initiatives for school-based nutrition education" (27). For teacher certification and education in nutrition, 39 states required course work in nutrition or competency for home economics teachers; health education teachers, 20 states; and elementary education teachers, six states.

Teacher preparation in nutrition education does not guarantee the effectiveness of the instruction. Studies on teacher preparation in nutrition education did support positive outcomes for improved teachers' commitment to nutrition, promotion of a positive attitude toward teaching, and increased classtime devoted to nutrition instruction (39). Of the 50 states studied by the Center for Disease Control, 44 states reported more NET funds should be used for additional teacher education (40).

While program outcomes are stated for nutrition education programs, the outcomes are not consistent. Some nutrition programs equate improved scores in knowledge, attitudes and practices as the expected outcomes; it is proposed that behavior is the true test of success. To further the discussion, various nutrition education programs may define behavior differently. For example, nutrition practices may be communicated vaguely (i.e., "use salt and sodium only in moderation," "use sugars only in moderation.") Another criticism that surfaces is whether the outcome should be problem-solving skills which can be applied to the food environment of supply, preparation, and service now and into the next century (39).

Teachers need to use a combination of methods for the most effective approach to teaching nutrition. In addition, basing the methods on social learning theory would strengthen the learning process. For example, mentoring, self-monitoring of behavior, and goal setting would enhance the learning process (39).

The Role of School Food Service Managers

School food service programs were started almost 100 years ago. These sporadic services were sponsored by private societies and associations. By the 1930s, Congress provided the framework for surplus agricultural commodities to be donated for the school lunch program. In the following decade, almost one-third of the young males were rejected for military service due to nutritional deficiencies. An outgrowth of this finding led to the permanent establishment of the school lunch with the passage of the National School Lunch Act of 1946 (28).

With the National School Lunch Program (NSLP) governed by the U.S. Department of Agriculture and the State Department of Education, a major goal is to safeguard the health and well-being of children across the country. Children are provided the opportunity to get about one-third of the needed nutrients from the meals planned and served by the school food service according to NSLP regulations (28). School lunches are to adhere to four components: meat/meat alternative, bread/bread alternate, vegetable/fruit, and fluid milk.

The School Breakfast Program, initiated under the Child Nutrition Act of 1966 as a pilot project for indigent areas, was legislatively passed in 1975. This resulted in making the School Breakfast Program open to all children in every state. This meal must include fluid milk, vegetable/fruit or full strength juice, two servings of bread/bread alternate and one meat/meat alternate (28).

Thus, the impact of school food service on children's nutritional status underscores the important role of school food service personnel (41-43). The knowledge and skills of school food service personnel are important factors for effective menu planning, procurement, production, and service of nutritious meals that are well accepted by children. Therefore, school food service personnel play a key role in acceptance of school nutrition programs (44, 45). The need to upgrade personnel in school food service has been identified by various sources (2, 46, 47, 48).

As a response to the need for standardized training for school food service personnel, Congress passed P.L. 101-147 in October 1989. This law mandated the establishment of the National School Food Service Management Institute (Institute) to conduct training activities to improve the operation and quality of Child Nutrition Programs. Two major studies dealing with the education and training of school food service managers have been completed by the Institute. The first study identified competency statements related to the jobs of school food service managers. The functional areas under which these competency statements were arranged included personnel management, professional development, program accountability, financial management and recordkeeping, marketing, procurement, food production, equipment use and care, and sanitation and safety (49). The second part of the study determined the continuing education needs of school food service managers as perceived by managers and their directors/supervisors (50).

School Food Service Operational Practices

Food service managers meet federal requirements for school lunch by their menu planning, procurement, production, and service practices (51). As a result of decreasing concern about nutrient deficiencies in school food service meals and increasing concern about macronutrient imbalance, there is increasing interest in serving foods that meet the Dietary Guidelines for Americans (2). According to Lytle, Kelder, and Snyder (52), the challenge for food service managers is serving foods that: meet the required menu patterns, are liked by the children, adhere to the Dietary Guidelines, and provide adequate calories for healthy growth and development.

Some strategies to improve the nutritional quality of school food service focus on single issues such as the fat or sodium content of school food service meals and menu items (53-58). However, an increasing number of studies have investigated the feasibility of implementing the Dietary Guidelines and the impact that this will have on menu planning, procurement, production, and service of school food service meals (59-63).

Developing the Primary List of Goals and Goal Indicators

Based on the review of literature on goals, standards, and evaluation of nutrition education and training, tentative goals and goal indicators were formulated. The major goals of the Nutrition Education and Training Program (64) provided an important foundation for the formulation of the primary list of goals and goal indicators. In addition, support for the major goals were provided by the Surgeon General's Report on Nutrition and Health (7), Nutrition and Your Health: Dietary Guidelines for Americans (2), Healthy People 2000: National Health Promotion and Disease Prevention Objectives (5), and Education for Self-Responsibility IV: Nutrition Education (41).
The major goals are to:

- Encourage development of lifelong healthy eating habits by teaching children and parents the relationship between food and health;

- Instruct food service personnel in the principles of management and in the preparation and service of nutritious, good tasting meals and snacks that meet the nutritional goals of the Dietary Guidelines for Americans;

- Encourage schools and child care centers to offer nutritious, appealing meals to support nutrition efforts in the classroom;

- Provide educators with nutrition information and ideas to combine classroom and meal time experiences in teaching children about nutrition; and

- Develop appropriate nutrition education materials.

The primary list of goals and goal indicators (criteria) for the Nutrition Education and Training in Texas is identified below. The list included goals and goal indicators that pertained to each of the NET's target populations, namely: children, parents, educators, food service personnel, and administrators. Each goal was followed by its indicators. The goals and indicators were sequenced according to desired knowledge, followed by desired attitudes, followed by desired practices.

GOALS & GOAL INDICATORS

TARGET POPULATIONS:

CHILDREN

GOAL: **The nutrition knowledge of children enables them to comprehend the relationships between food habits and health status.**

Indicator: nutrition knowledge assessment scores of children on:
- food safety/sanitation
- functions of nutrients
- dietary guidelines
- self-responsible choices
- healthy snack choices
- healthy food choices
- nutritional needs
- food preferences
- food traditions
- nutrition and fitness
- nutritional life skills

GOAL: **The nutrition attitudes of children enhance the development of lifelong healthy eating habits.**

Indicator: attitude inventory scores of children on:
- food safety/sanitation
- functions of nutrients
- dietary guidelines
- self-responsible choices
- healthy snack choices
- healthy food choices
- nutritional needs
- food preferences
- food traditions
- nutrition and fitness
- nutritional life skills

GOAL: **The nutrition behavior of children is consistent with the nutritional goals of the Dietary Guidelines for Americans.**

Indicator: food frequency of children
- plate-waste records of children (at school)

GOAL: **The nutrition knowledge, attitudes and behavior of children have a positive effect on their scholastic achievement, health and physical fitness.**

Indicators: national achievement test scores
family history
- premature birth
- drug use
- diseases

health and physical fitness information
- -dental
- -height
- -weight
- -hematocrit values
- -percent body fat
- -urinalysis for glucose and protein
- -blood pressure

PARENTS

GOAL: **The nutrition knowledge of parents enables them to comprehend the relationships between food habits and health status.**

Indicator: nutrition knowledge assessment scores of parents on:
- -food safety/sanitation
- -functions of nutrients
- -dietary guidelines
- -self-responsible choices
- -healthy snack choices
- -healthy food choices
- -nutritional needs
- -food preferences
- -food traditions
- -nutrition and fitness
- -nutritional life skills

GOAL: **The nutrition attitudes of parents enhance the development of lifelong healthy eating habits.**

Indicator: attitude inventory scores of parents on:
- -food safety/sanitation
- -functions of nutrients
- -dietary guidelines
- -self-responsible choices
- -healthy snack choices
- -healthy food choices
- -nutritional needs
- -food preferences
- -food traditions
- -nutrition and fitness
- -nutritional life skills

GOAL: **The nutrition behavior of parents is consistent with the nutritional goals of the Dietary Guidelines for Americans and serves as a model for children's behavior.**

Indicator: food frequency of parents

EDUCATORS

GOAL: **Educators effectively communicate nutrition knowledge to children.**

Indicator: nutrition knowledge assessment scores of teachers on:
- -food safety/sanitation
- -functions of nutrients
- -dietary guidelines
- -self-responsible choices
- -healthy snack choices
- -healthy food choices
- -nutritional needs
- -food preferences
- -food traditions
- -nutrition and fitness
- -nutritional life skills

GOAL: **Educators communicate positive nutrition attitudes to children.**

Indicator: attitude inventory scores of teachers on:
- -food safety/sanitation
- -functions of nutrients
- -dietary guidelines
- -self-responsible choices
- -healthy snack choices
- -healthy food choices
- -nutritional needs
- -food preferences
- -food traditions
- -nutrition and fitness
- -nutritional life skills

GOAL: **Educators coordinate classroom and meal time experiences in teaching nutrition to children.**

Indicator: NET needs assessment questionnaire on:
- -educational resources
- -nutrition education materials
- -teaching methods

GOAL: **Educators model acceptable nutrition behaviors to children.**

Indicator: teachers' responses to questionnaire on eating behaviors

FOOD SERVICE PERSONNEL

GOAL: **The management knowledge of food service managers will allow them to maximize the available resources of the food service operation.**

Indicator: management assessment scores of food service managers on:
- -financial management
- -food acceptability
- -food production
- -marketing
- -nutrition and menu planning
- -personnel management

- procurement
- sanitation and safety
- service

GOAL: **The nutrition knowledge of food service personnel (managers and workers) enables them to comprehend the relationships between food habits and health status.**

Indicator: nutrition knowledge assessment scores of food service personnel on:

- food safety/sanitation
- functions of nutrients
- dietary guidelines
- self-responsible choices
- healthy snack choices
- healthy food choices
- nutritional needs
- food preferences
- food traditions
- nutrition and fitness
- nutritional life skills

GOAL: **The nutrition attitudes of food service personnel promotes the development of lifelong healthy eating habits.**

Indicator: attitude inventory scores of food service personnel on:

- food safety/sanitation
- functions of nutrients
- dietary guidelines
- self-responsible choices
- healthy snack choices
- healthy food choices
- nutritional needs
- food preferences
- food traditions
- nutrition and fitness
- nutritional life skills

GOAL: **Food service personnel will plan, procure, prepare and serve nutritious, good tasting meals and snacks that meet the USDA National School Lunch Menu Pattern and the Dietary Guidelines for Americans.**

Indicators: food service personnel responses to questionnaire on operational practices
analysis of school food service menu

GOAL: **Schools and child care centers offer meals which reinforce nutrition concepts taught in the classroom.**

Indicator: evidence of reinforcement evaluated by teachers and food service personnel

ADMINISTRATORS

GOAL: **Administrators support teachers and food service personnel in the promotion of nutrition**

knowledge, attitudes and behavior and acknowledge the relationships of health and physical fitness.

Indicators: assessment scores of administrators knowledge of:
 -relationships between nutrition and health and physical fitness
 -administrative problems related to nutrition and nutrition education

attitude inventory scores of administrators on nutrition and nutrition education

administrators response to questionnaire on evidence of administrative support for teachers and food service personnel

Reaching Consensus on the Goals and Goal Indicators: The Delphi Technique

To validate the goals and goal indicators (criteria), the Delphi technique was selected. This technique was used in order to provide effective feedback from a group of experts interested in nutrition education and responsible for furthering nutrition education and training in the State of Texas.

A definition of the Delphi technique is that it:

> may be characterized as a method for structuring
> a group communication process so that the process
> is effective in allowing a group of individuals,
> as a whole, to deal with a complex problem (65).

The conventional Delphi technique was used in the communication process to acquire feedback on the goals and goal indicators. In the Delphi technique, respondents were directed to evaluate the importance of each goal and its indicators. In addition, those responding were directed to make suggestions for clarity of the goals and indicators and to list any new goals and/or goal indicators. Following the development of the primary list of goals and goal indicators, a Delphi panel was selected.

The members of the Delphi panel were selected for their professional involvement and commitment to nutrition education. Panel members included nutritional professionals who were leaders at the state level. For example, representation included nutritionists at the Texas Department of Human Services, Texas Department of Agriculture, Texas Agricultural Extension Service, Texas Education Agency, Texas Department of Health, and the Texas Dietetic Association. The Delphi panel were members of the TExas Interagency Council on Nutrition (ICON). Delphi panel members are listed in Appendix A.

Delphi Round I

Procedures

The instruments for Round I of the Delphi technique were prepared and reviewed by the project director and members of the team. Each goal and its indicators (criteria) were listed with a five-point Likert type scale for the response rating. Respondents were instructed to respond to each goal and indicator by selecting 5 for "very great importance", 4 for "great importance", 3 for "small importance", 2" for "little importance", and 1 for "very little importance". Respondents rated according to the importance of the goal and indicator.

Respondents were also asked to comment on the accuracy of each goal and goal indicator and include additional goals and inciators as needed. In addition to the directions, stamped, self-addressed envelopes were included in the mailing for the return of the completed instrument.

The instruments for Round I of the Delphi technique were mailed February 3, 1993, to all 26 members of the Texas Interagency Council on Nutrition (ICON). A more current list of ICON members was received, and the new members were sent facsimile copies of the Goals and Goal Indicators on February 9. Six of the 40 instrument mailings were not accepted due to personnel changes; therefore, the total number was reduced to 34.

Austin members of ICON who had not returned their questionnaires were contacted on February 12. Questionnaires were sent by facsimile to those members who did not receive their instruments.

Results

If the instruments were not returned within ten days, the ICON members were requested to send their responses by facsimile to the Texas Tech University NET Office. Twenty individuals returned their instruments for a 59% return rate.

Table 1 Results of the first round of the Delphi

Goals and Goal Indicators for Target Populations		Percentage	Number of Respondents
CHILDREN			
GOAL:	**The nutrition knowledge of children enables them to comprehend the relationships between food habits and health status.**	82	17
Indicator:	nutrition knowledge assessment scores of children on:		
	-food safety/sanitation	56	18
	-functions of nutrients	39	18
	-dietary guidelines	61	18
	-self-responsible choices	89	18
	-healthy snack choices	100	17
	-healthy food choices	100	18
	-nutritional needs	67	18
	-food preferences	53	17
	-food traditions	59	17
	-nutrition and fitness	89	18
	-nutritional life skills	57	14
GOAL:	**The nutrition attitudes of children enhance the development of lifelong healthy eating habits.**	100	16
Indicator:	attitude inventory scores of children on:		
	-food safety/sanitation	58	19
	-functions of nutrients	39	18
	-dietary guidelines	68	19
	-self-responsible choices	89	19
	-healthy snack choices	100	18
	-healthy food choices	100	19
	-nutritional needs	68	19
	-food preferences	53	19
	-food traditions	74	19
	-nutrition and fitness	89	18
	-nutritional life skills	73	15

Goals and Goal Indicators for Target Populations		Percentage	Number of Respondents
GOAL:	**The nutrition behavior of children is consistent with the nutritional goals of the Dietary Guidelines for Americans.**	89	18
Indicators:	food frequency of children	63	19
	plate-waste records of children (at school)	68	19
GOAL:	**The nutrition knowledge, attitudes and behavior of children have a positive effect on their scholastic achievement, health and physical fitness.**	100	18
Indicators:	national achievement test scores		
	family history	83	18
	-premature birth	50	20
	-drug use	75	20
	-diseases	70	20
	health and physical fitness information	74	19
	-dental	58	19
	-height	70	20
	-weight	75	20
	-hematocrit values	75	20
	-percent body fat	65	20
	-urinalysis for glucose and protein	53	19
	-blood pressure	58	19
PARENTS			
GOAL:	**The nutrition knowledge of parents enables them to comprehend the relationships between food habits and health status.**	94	18
Indicator:	nutrition knowledge assessment scores of parents on:		
	-food safety/sanitation	68	19
	-functions of nutrients	42	19

Goals and Goal Indicators for Target Populations	Percentage	Number of Respondents
-dietary guidelines	89	19
-self-responsible choices	95	19
-healthy snack choices	94	18
-healthy food choices	100	19
-nutritional needs	84	19
-food preferences	67	18
-food traditions	78	18
-nutrition and fitness	95	19
-nutritional life skills	80	15
GOAL: **The nutrition attitudes of parents enhance the development of lifelong healthy eating habits.**	89	18
Indicator: attitude inventory scores of parents on:		
-food safety/sanitation	70	20
-functions of nutrients	53	19
-dietary guidelines	80	20
-self-responsible choices	90	20
-healthy snack choices	89	19
-healthy food choices	95	20
-nutritional needs	70	20
-food preferences	70	20
-food traditions	85	20
-nutrition and fitness	79	19
-nutritional life skills	71	17
GOAL: **The nutrition behavior of parents is consistent with the nutritional goals of the Dietary Guidelines for Americans and serves as a model for children's behavior.**	79	19
Indicator: food frequency of parents	70	20
EDUCATORS		
GOAL: **Educators effectively communicate nutrition knowledge to children.**	79	19

Goals and Goal Indicators for Target Populations		Percentage	Number of Respondents
Indicator:	nutrition knowledge assessment scores of teachers on:		
	-food safety/sanitation	80	20
	-functions of nutrients	75	20
	-dietary guidelines	90	20
	-self-responsible choices	75	20
	-healthy snack choices	95	19
	-healthy food choices	95	20
	-nutritional needs	85	20
	-food preferences	58	19
	-food traditions	74	19
	-nutrition and fitness	85	20
	-nutritional life skills	78	18
GOAL:	**Educators communicate positive nutrition attitudes to children.**	84	19
Indicator:	attitude inventory scores of teachers on:		
	-food safety/sanitation	75	20
	-functions of nutrients	58	19
	-dietary guidelines	85	20
	-self-responsible choices	80	20
	-healthy snack choices	89	19
	-healthy food choices	90	20
	-nutritional needs	85	20
	-food preferences	65	20
	-food traditions	70	20
	-nutrition and fitness	89	19
	-nutritional life skills	72	18
GOAL:	**Educators coordinate classroom and meal time experiences in teaching nutrition to children.**	82	17
Indicator:	NET needs assessment questionnaire on:		
	-educational resources	58	19
	-nutrition education materials	68	19

Goals and Goal Indicators for Target Populations		Percentage	Number of Respondents
	-teaching methods	68	19
GOAL:	**Educators model acceptable nutrition behaviors to children.**	80	20
Indicator:	teachers' responses to questionnaire on eating behaviors	70	20
FOOD SERVICE PERSONNEL			
GOAL:	**The management knowledge of food service managers will allow them to maximize the available resources of the food service operation.**	100	18
Indicator:	management assessment scores of food service manager on:		
	-financial management	85	20
	-food acceptability	85	20
	-food production	85	20
	-marketing	85	20
	-nutrition and menu planning	95	20
	-personnel management	75	20
	-procurement	90	20
	-sanitation and safety	90	20
	-service	83	18
GOAL:	**The nutrition knowledge of food service personnel (managers and workers) enables them to comprehend the relationships between food habits and health status.**	84	19
Indicator:	nutrition knowledge assessment scores of food service personnel on:		
	-food safety/sanitation	90	20
	-functions of nutrients	45	20
	-dietary guidelines	85	20
	-self-responsible choices	85	20
	-healthy snack choices	95	19
	-healthy food choices	100	20

Goals and Goal Indicators for Target Populations		Percentage	Number of Respondents
	-nutritional needs	80	20
	-food preferences	74	19
	-food traditions	79	19
	-nutrition and fitness	85	20
	-nutritional life skills	82	17
GOAL: The nutrition attitudes of food service personnel promotes the development of lifelong healthy eating habits.		74	19
Indicator:	attitude inventory scores of food service personnel on:		
	-food safety/sanitation	80	20
	-functions of nutrients	32	19
	-dietary guidelines	70	20
	-self-responsible choices	75	20
		74	19
	-healthy snack choices		
	-healthy food choices	80	20
	-nutritional needs	55	20
	-food preferences	68	19
	-food traditions	74	19
	-nutrition and fitness	72	18
	-nutritional life skills	69	16
GOAL: Food service personnel will plan, procure, prepare and serve nutritious, good tasting meals and snacks that meet the USDA National School Lunch Menu pattern and the Dietary Guidelines for Americans.		85	20
Indicators:	food service personnel responses to questionnaire on operational practices	75	20
	analysis of school food service menu	85	20

Goals and Goal Indicators for Target Populations	Percentage	Number of Respondents
GOAL: **Schools and child care centers offer meals which reinforce nutrition concepts taught in the classroom.**	89	18
Indicator: evidence of reinforcement evaluated by teachers and food service personnel	78	18
ADMINISTRATORS		
GOAL: **Administrators support teachers and food service personnel in the promotion of nutrition knowledge, attitudes and behavior, and acknowledge the relationships of health and physical fitness.**	79	19
Indicators: assessment scores of administrators knowledge of:		
-relationships between nutrition and health and physical fitness	80	20
-administrative problems related to nutrition and nutrition education	70	20
attitude inventory scores of administrators on nutrition and nutrition education	80	20
administrators response to questionnaire on evidence of administrative support for teachers and food service personnel	70	20

The number of goals and indicators measured was 140; of these, 67 were accepted for 48% level of acceptance. The total number of responses was 2,660 with 2,048 of those selecting levels of agreement of 4 (great importance) or 5 (very great importance) (77%).

Delphi Round II

Procedures

Modifications to items from Round I were underlined; added items were identified as NEW on the instrument. The goal indicators were listed in descending order of importance. Respondents were directed to respond to all items including those with less than 80 percent consensus including the new items. Thus, the original answers were re-evaluated based on the examination of the group response. The revised instrument was prepared and mailed February 26, 1993 to 34 ICON members for their evaluation. After two weeks, telephone calls were made to those not responding.

Results

The final number of returned instruments was 24, a 71% return rate. The results were summarized and the goals and indicators with consensus of 80 percent or above were included in Round II of the Delphi. Frequencies and means were computed to determine the value level on the revised goals and goal indicators. To be accepted for inclusion in the final list of goals and goal indicators, 70% was identified as acceptable. Of the 91 goals and indicators measured, 33 were accepted for a 36% level of acceptance. The total number of responses was 2,118; of these, 1,326 responded with values of 4 (great importance) or 5 (very great importance) These responses resulted in over 60 percent (62%) of the responses having a value of 4 or 5.

Final List of Goals and Goal Indicators

Preparation of a list of the final goals and goal indicators was completed to guide the project. In addition to the feedback from the Delphi Panel, some modifications were made. If the goal was rated above 70%, but the goal indicator was not the indicator had to be evaluated and necessary adjustments made. Only one goal and two goal indicators that did not reach the 70 percent cutting point were included in the final list. In addition, for "Goal Indicator 10: Educators model acceptable nutrition behaviors to children" with "Goal Indicator 10.2 consistency between food intake of teachers at school and Dietary Guidelines for Americans" and "10.2.1 observed food item selection and intake", the observation of teachers' food item selection and intake was not possible. The majority of teachers do not accompany their classes and eat lunch in the cafeteria so the Goal Indicator 10.2.1 was deleted. The final list of the goals and goal indicators reflects this revision.

Following the field testing in spring 1993, revisions were made for any of the goal indicators which included "healthy meal choices" and "healthy snack choices". Based on factor analysis, the "healthy meal choices" and "healthy snack choices" were combined and expressed as "healthy food choices". In addition, for the criteria to be consistent across the target populations, the same number was used for each criterion included in those populations. For example, healthy food choices is listed as criterion one (1) for the goals and goal indicators on nutrition knowledge and nutrition attitudes for children, parents, educators, food service personnel, and administrators. The criteria numbers are consistent among all target populations; however, not all target populations have the same list of criteria. Therefore, the criteria within a target populations may not be consecutively numbered. Following is the final list of the goals and goal indicators.

TARGET POPULATIONS:

CHILDREN

1. GOAL: **The nutrition knowledge of children enables them to comprehend the relationships between food habits, health status, and scholastic achievement.**

GOAL INDICATOR:
- **1.1 nutrition knowledge assessment scores of children on:**
  - 1.1. 1 healthy food choices
  - 1.1. 2 nutrition and health/fitness
  - 1.1. 3 self-responsibility for food selection
  - 1.1. 4 nutrition and scholastic achievement

2. GOAL: **The nutrition attitudes of children enhance the development of healthy eating habits.**

GOAL INDICATOR:
- **2.1 attitude inventory scores of children on:**
  - 2.1. 1 healthy food choices
  - 2.1. 2 nutrition and health/fitness
  - 2.1. 3 self-responsibility for food selection
  - 2.1. 4 nutrition and scholastic achievement

3. GOAL: **The nutrition behavior of children is consistent with the nutritional goals of the Dietary Guidelines for Americans.**

GOAL INDICATORS:
- **3.1 consistency between food choices of children and Dietary Guidelines for Americans**
  - 3.1. 1 healthy food choices

- **3.2 consistency between food intake of children and Dietary Guidelines for Americans**
  - 3.2. 1 reported food intake
  - 3.2. 2 observed food item selection and intake

4. GOAL: **The nutrition knowledge, attitudes and behavior of children have a positive effect on their scholastic achievement, health, and physical fitness.**

GOAL INDICATORS:

4.1 correlation between scholastic achievement and nutrition knowledge, attitudes, and behavior of children

4.2 correlation between medical history and nutrition knowledge, attitudes, and behavior of children

4.2. 1 family history

4.3 correlation between health and physical fitness and nutrition knowledge, attitudes, and behavior of children

4.3. 1 hematocrit values
4.3. 2 weight in relation to height
4.3. 3 percent body fat

4.4 correlation between scholastic achievement and health and physical fitness

PARENTS

5. GOAL: **The nutrition knowledge of parents enables them to comprehend the relationships between food habits, health status, and scholastic achievement.**

GOAL INDICATOR:

5.1 nutrition knowledge assessment scores of parents on:

5.1. 1 healthy food choices
5.1. 2 nutrition and health/fitness
5.1. 3 self-responsibility for food selection
5.1. 4 nutrition and scholastic achievement
5.1. 5 nutritional needs
5.1. 6 Dietary Guidelines for Americans
5.1. 7 nutritional life/consumer skills

6. GOAL: **The nutrition attitudes of parents enhance the development of healthy eating habits.**

GOAL INDICATOR:

6.1 attitude inventory scores of parents on:

6.1. 1 healthy food choices
6.1. 2 nutrition and health/fitness
6.1. 3 self-responsibility for food selection
6.1. 4 nutrition and scholastic achievement
6.1. 6 Dietary Guidelines for Americans
6.1.10 food traditions

7. GOAL: **The nutrition behavior of parents is consistent with the nutritional goals of the Dietary Guidelines for Americans and serves as a model for children's behavior.**

GOAL INDICATOR:

7.1 consistency between food choices of parents and Dietary Guidelines for Americans

7.1. 1 healthy food choices

7.2 consistency between food intake of parents and Dietary Guidelines for Americans
    7.2. 1 reported food intake

EDUCATORS

8. GOAL: **Educators' nutrition knowledge enables them to effectively communicate nutrition concepts to children.**

GOAL INDICATOR:
8.1 nutrition knowledge assessment scores of teachers on:
    8.1. 1 healthy food choices
    8.1. 2 nutrition and health/fitness
    8.1. 3 self-responsibility for food selections
    8.1. 4 nutrition and scholastic achievement
    8.1. 5 nutritional needs
    8.1. 6 Dietary Guidelines for Americans
    8.1. 8 food safety/sanitation
    8.1. 9 effective methods of teaching nutrition

9. GOAL: **Educators' nutrition attitudes enable them to communicate positive nutrition attitudes to children.**

GOAL INDICATOR:
9.1 attitude inventory scores of teachers on:
    9.1. 1 healthy food choices
    9.1. 2 nutrition and health/fitness
    9.1. 3 self-responsibility for food selection
    9.1. 4 nutrition and scholastic achievement
    9.1. 5 nutritional needs
    9.1. 6 Dietary Guidelines for Americans
    9.1. 8 food safety/sanitation
    9.1.11 functions of nutrients in maintaining health
    9.1.12 nutrition education

10. GOAL: **Educators model acceptable nutrition behaviors to children.**

GOAL INDICATOR:
10.1 consistency between food choices of teachers and Dietary Guidelines for Americans
    10.1. 1 healthy food choices

11. GOAL: **Educators coordinate classroom and meal time experiences in teaching nutrition to children.**

GOAL INDICATOR:

11.1 Educators' responses to questionnaire on:
    11.1. 1 administrative support
    11.1. 2 school food service support
    11.1. 3 the school cafeteria as a learning laboratory

FOOD SERVICE PERSONNEL

12. GOAL: **The nutrition knowledge of food service personnel (managers and workers) enables them to comprehend the relationships between food habits and health status.**

GOAL INDICATOR:
12.1 nutrition knowledge assessment scores of food service personnel on:
    12.1. 1 healthy food choices
    12.1. 2 nutrition and health/fitness
    12.1. 3 self-responsibility for food selection
    12.1. 4 nutrition and scholastic achievement
    12.1. 5 nutritional needs
    12.1. 6 Dietary Guidelines for Americans
    12.1. 7 nutritional life/consumer skills
    12.1. 8 food safety/sanitation

13. GOAL: **The nutrition attitudes of food service personnel promotes the development of healthy eating habits in children.**

GOAL INDICATOR:
13.1 attitude inventory scores of food service personnel on:
    13.1. 1 healthy food choices
    13.1. 2 nutrition and health/fitness
    13.1. 4 nutrition and scholastic achievement
    13.1. 6 Dietary Guidelines for Americans
    13.1. 8 food safety/sanitation

14. GOAL: **The management knowledge of food service managers will allow them to maximize the available resources of the food service operation.**

GOAL INDICATOR:
14.1 management assessment scores of food service managers on:
    14.1. 1 marketing
    14.1. 2 nutrition and menu planning
    14.1. 3 procurement
    14.1. 4 food production
    14.1. 5 service
    14.1. 6 sanitation and safety
    14.1. 7 food acceptability
    14.1. 8 financial management

15. GOAL: **Food service personnel will plan, procure, prepare and serve nutritious, good tasting meals and snacks which meet the appropriate USDA Meal Pattern and the Dietary Guidelines for Americans.**

GOAL INDICATORS:
- **15.1 analysis of school food service menu**
- **15.2 observed operational practices**

16. GOAL: **Schools and child care centers offer meals which reinforce nutrition concepts taught in the classroom.**

GOAL INDICATOR:
- **16.1 Food service personnel responses to questionnaire on:**
  - 16.1. 1 administrative support
  - 16.1. 2 educator support of school food service
  - 16.1. 3 food service personnel coordination with educators to reinforce nutrition concepts

ADMINISTRATORS

17. GOAL: **Administrators support teachers and food service personnel in the promotion of nutrition knowledge, attitudes and behavior and acknowledge the relationships of health, physical fitness, and scholastic achievement.**

GOAL INDICATORS:
- **17.1 assessment scores of administrators knowledge of:**
  - 17.1. 1 relationships between nutrition, health, physical fitness and scholastic achievement
- **17.2 attitude inventory scores of administrators on nutrition and nutrition education**
- **17.3 administrative problems related to nutrition and nutrition education**
- **17.4 administrators' response to questionnaire on:**
  - 17.4. 1 reported administrative support of nutrition education
  - 17.4. 2 reported administrative support of school food service
  - 17.4. 3 coordination of nutrition education by teachers and food service personnel

The Goals and Indicators as Criteria for Nutrition Knowledge, Attitudes and Behaviors

The goals and goal indicators provided criterion-related validity for the development of assessment instruments on nutrition knowledge, attitudes, and practices. Through the validation process, the goals and goal indicators, indicated desired knowledge, attitudes and practices in the target populations and served as the table of specifications for assessment. A table of specifications ensures that a representative sample of the desired behavior is being tested (66).

SECOND PHASE: COLLECTING AVAILABLE DATA AND DEVELOPING DATA COLLECTION INSTRUMENTS AND PROCEDURES

Sample

Target Populations and Sub-populations

In this study individual school campuses from among all the public and non-public schools in the state of Texas were the sampling units. Data will be collected from students in the third, fifth, eighth, and eleventh grade. Elementary, junior high, and high schools were considered separate populations in this study.

Sample Stratification

Selection of schools were determined by three school variables: student ethnicity composition, student family income, and student achievement. Schools were classified into three categories on the variable of students' ethnicity composition:

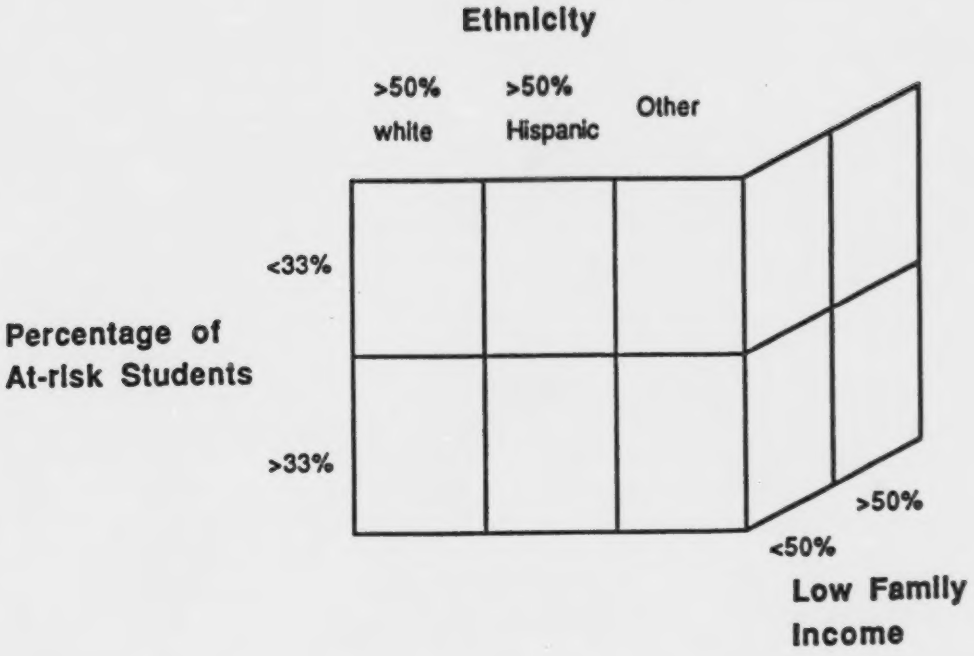
(a) schools with more than 50% of white students, (b) schools with more than 50% of Hispanic students, and (c) other schools which have no dominant ethnicity group. The Asian American and Native-American students represented only 2.2% and 0.2% of the student population, respectively. It would have beena difficult to obtain enough students from these two ethnic groups unless the category of schools with no dominant ethnicity group was heavily oversampled.

Schools were also classified into two categories on the variable of student family income. They were (a) schools with more than 50% of students from low-income families based on free and reduced meals and (b) schools with less than 50% of students from low-income families based on free and reduced meals.

Finally, schools were classified into two categories on the variable of scholastic achievement. These categories were (a) schools with more than 34% of students identified as students at-risk, and (b) schools with less than 34% of students identified as students at-risk.

Twelve subpopulations constituted the classification of the three variables (three levels of the variable of ethnicity x two levels of the variable of family income x two levels of the variable of achievement) as shown in Figure 1. This 3 x 2 x 2 stratification schema was constructed for the populations of elementary, junior high and high school. This stratification schema also provided a sampling frame, that is a list of schools in each subpopulations.

Figure 1: Sample Stratas


Ethnicity
>50% white
>50% Hispanic
Other
<33%
>33%
Percentage of At-risk Students
>50%
<50%
Low Family Income

Sample Size and Rationale

The sample size was determined through a formula proposed by Krejcie & Morgan (67), with the consideration of (a) a known population size, (b) a specified confidence level (e.g., 95%), (c) a degree of accuracy as reflected by the amount of sampling error that can be tolerated (e.g., ±0.05, or ±5%).

Sample Selection

The sample selection was facilitated by the Texas Education Agency (TEA), following the procedure below:

1. TEA selected schools which contained the third, fifth, eighth, or eleventh grade to form four school populations.
2. For each population, TEA constructed a stratification table of three variables of ethnicity, family income, and achievement as described above. This table contained the information of the total number of schools in each subpopulation and the total number of schools of the population.
3. TEA sent the stratification table to determine the sample size and the number of school selected from each subpopulation.
4. After receiving the specified sample size and number of schools chosen from each subpopulation, the schools were randomly selected by the project statistician for the final sample.

The sampling procedure for the NET project was composed of two steps. The first step was to select campuses of elementary, junior high, and high schools as a sample that will be required to respond to the questionnaires. The second step was to select a subsample of the selected campuses of elementary, junior high, and high schools to conduct the observation part of the research.

A factor of nonresponse was considered in the sampling procedure because some schools will not respond to the appeal to participate in the research or terminate participation during the research. The response rate is predicted to be 67%, and the final sample size should be 500, the selected samplel should include 750 schools.

Because the sample included both public and non-public schools, the 750 campuses were proportionally selected from the public and non-public school population. Among the 5,731 schools in the state of Texas, including both public and non-public schools, 92.81% were public schools and 7.19% were non-public schools, therefore, 696 public schools and 54 non-public schools were included in the sample. (Only schools classified into three groups of elementary, junior high, and high schools were included in the population.) See Appendix C for support materials on the sample.

	Public	Non-Public	Total
Elementary	3,266	282	3,548
Junior High	1,029	33	1,062
High School	1,024	97	1,121
Total	5,319	412	5,731
	(92.81%)	(7.19%)	(100%)
Number of Schools	696	54	750

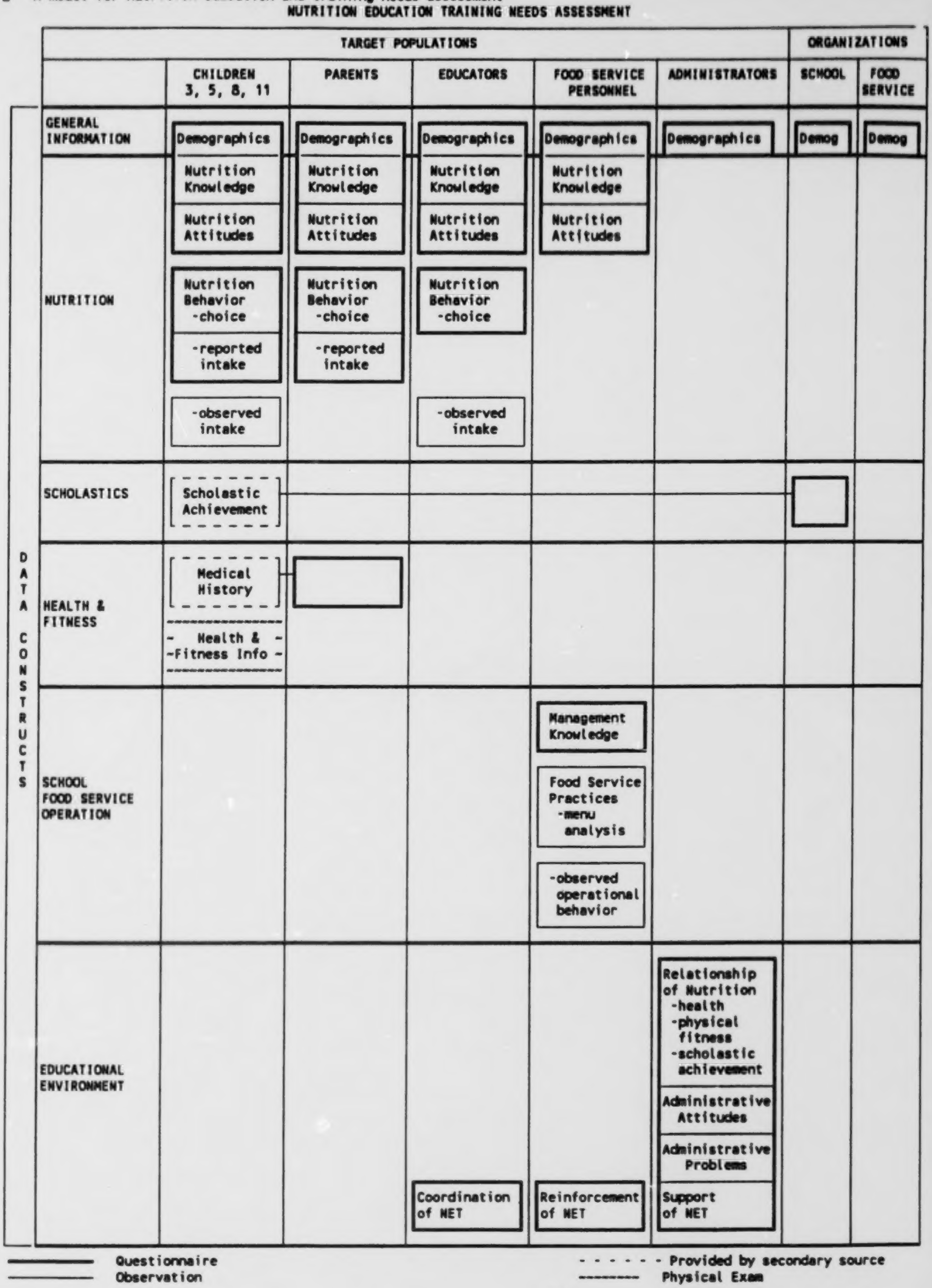
Types of Data

As mentioned above, the validated goals and goal indicators served as the table of specifications for the Nutrition Education and Training Needs assessment. Based on the goals and goal indicators, a model for the Nutrition Education Training Needs assessment was developed to depict the data constructs, target populations, and sources of data. Different outlines indicated the type of instruments used to collect the data constructs. Figure 2 represents this model. The data constructs included nutrition knowledge and nutrition attitudes of children, parents, educators, and food service personnel; and nutrition practices of children, parents, and educators (Figure 2). For nutrition behavior, both types of food choices (reported food intake in food frequency format and observed food intake) were included. Given parental consent of the children, data on scholastic achievement, medical history, and health and physical fitness information will be collected. As noted in Figure 2, this information will be provided by a secondary source.

Assessment instruments were designed to collect different types of data. Thus, there were: a) instruments for children, parents, teachers, school administrators, and food service personnel to measure the nutritional knowledge, attitudes, and practices of the sample; b) instruments for menu analysis, food choices, reported food intake, and observed food intake to measure the type and amount of foods served, consumed, and/or discarded by children; c) instruments to collect health information (height, weight, hematocrit values) and children's physical fitness (body fat, pulse before and after exercise); and d) instruments to collect data on the promotion of nutrition knowledge, attitudes and behavior and the relationships of health, physical fitness and scholastic achievement. Items to collect demographic information from each of the target populations were included in the instrument.

In addition to responding to the nutrition knowledge, nutrition attitudes, nutrition behavior and demographics, educators will respond to the coordination of nutrition education and training within the school environment. A questionnaire for administrators will assess the attitudes, problems, support of nutrition education and training, and the

Figure 2 A model for nutrition education and training needs assessment



NUTRITION EDUCATION TRAINING NEEDS ASSESSMENT

DATA CONSTRUCTS	TARGET POPULATIONS					ORGANIZATIONS	
	CHILDREN 3, 5, 8, 11	PARENTS	EDUCATORS	FOOD SERVICE PERSONNEL	ADMINISTRATORS	SCHOOL	FOOD SERVICE
GENERAL INFORMATION	Demographics	Demographics	Demographics	Demographics	Demographics	Demog	Demog
NUTRITION	Nutrition Knowledge Nutrition Attitudes Nutrition Behavior -choice -reported intake -observed intake	Nutrition Knowledge Nutrition Attitudes Nutrition Behavior -choice -reported intake	Nutrition Knowledge Nutrition Attitudes Nutrition Behavior -choice -observed intake	Nutrition Knowledge Nutrition Attitudes			
SCHOLASTICS	Scholastic Achievement						
HEALTH & FITNESS	Medical History Health & Fitness Info						
SCHOOL FOOD SERVICE OPERATION				Management Knowledge Food Service Practices -menu analysis -observed operational behavior			
EDUCATIONAL ENVIRONMENT			Coordination of NET	Reinforcement of NET	Relationship of Nutrition -health -physical fitness -scholastic achievement Administrative Attitudes Administrative Problems Support of NET		

Questionnaire
Observation
- - - - - - Provided by secondary source
-------- Physical Exam

relationship of nutrition to health/physical fitness and scholastic achievement.

The food service questionnaire included assessment of management knowledge demographics and reinforcement of nutrition education and training. Food service practices will be assessed by: a) menu analysis through the submission of planned school breakfast and lunch menus to the project team for compliance measures; and b) operational behavior through observation by a trained researcher who will complete a prepared checklist.

General Criteria

To conduct a needs assessment, one should address the validity, reliability, and readability of the instruments. According to Gronlund and Linn (66), interpretations of tests scores are likely to have greater validity when we perceive "1) the test content and the specifications it was derived from, 2) the relation of the test scores to other significant measures, and 3) the nature of the characteristic(s) being measured".

The second criterion, reliability, refers to "the consistency of evaluation results" (67). Statistical tests were computed to determine the reliability estimates. The reliability estimates are identified with the reports on the field tests within each target population.

Several procedures were used to asses the readability levels of the instruments for the target populations. Reading faculty in the College of Education, Texas Tech University, provided valuable guidance in conducting the readability assessments.

In addition to using Fry's readability graph (68) a computer program was used (69,70) to assess the readability of each instrument. The text of the tests were revised accordingly. Experienced public school teachers reviewed the instruments for readability and their comments were incorporated.

Field Tests

Administrators at local schools were contacted in April 1993 to schedule the field testing of the instruments with the target populations. The schedule for participating schools, related correspondence and dates for the dissemination of instruments is listed in Appendix C.

Instruments were reproduced and collated for each target population; the instruments were color coded to facilitate the sorting and packaging. Directions for administering the instruments were included for each target population. As a courtesy to the participants, brochures on the Dietary Guidelines for Americans were included with the assessment packets.

Members of the research team administered the instruments to students in grade 3. These instruments were read to the students. Data for observed food intake (plate waste) and observed operational practices were collected on site by the researchers. Instruments were delivered to each of the field test sites for grades 5, 8, and 11. Other participants representing the target populations were contacted at the school sites or by first-class mail.

In addition to the field tests conducted in spring 1993, the instruments were administered to students in grades 3, 5, 8, and 11 in September 1993 at a different local school site. Data were coded, entered, and analyzed on the computer using the SSPS-X (71) statistical program. The administration of these instruments provided the time required for students to respond to the revised questionnaires.

Children's Instruments

Using the goals and goal indicators as a foundation, instruments were developed for students in grades 3, 5, 8, and 11. The instruments for students in these grades were similar in format. The first section consisted of objective questions on gender, ethnicity, learning about nutrition, and cafeteria eating patterns for breakfast and lunch. For the self-report instrument, all students were assessed in the areas of: nutrition knowledge, nutrition attitude, nutrition behavior, and open-ended questions on decisions on eating and major eating concerns. Instruments to collect observational data were developed (observed food intake, health, and physical fitness measures).

Nutrition Knowledge

Objective tests were developed to determine achievement of students relative to nutrition knowledge. The multiple-choice test item was the form selected to measure nutrition knowledge since this format is the most highly regarded and widely used form of objective test item (72).

A pool of four-option multiple choice items was written for each goal indicator and its criteria (healthy meal choices, healthy snack choices, nutrition and fitness, self-responsibility for food selection, and nutrition and scholastic achievement) in order to select the most discriminating questions. Approximately ten multiple-choice items were written for each criterion. Thus, if school children were to be assessed with one goal indicator and five criteria, approximately 50 multiple choice items were written for the field test. Members of the research team reviewed the test items for clarity, relevance, relation to the indicator, and duplication. Revisions were made followed by additional reviews.

The test items were prepared for field testing during spring 1993. Each section of the instrument was color coded for the designated grade level. Following the administration and collection of the instruments, data were coded, entered into the computer and analyzed using the SPSS-X statistical program (71).

Based on the factor analysis, the criteria for the goal indicator 1.1 nutrition knowledge assessment scores of children were revised. The original criteria 1.1.1 (healthy meal choices) and 1.1.2 (healthy snack choices) were revised to the new criterion 1.1.1 healthy food choices. Thus, the remaining criteria were renumbered and the original 1.1.3 (nutrition and fitness) became the new 1.1.2 nutrition and health/fitness. The original 1.1.4 (self-responsible choices/self-responsibility for food intake) was revised to the new 1.1.3 self-responsibility for food selection. On the original 1.1.5 (nutrition and scholastic achievement), the numbering was revised to form the new 1.1.4 and no change was made in the wording (nutrition and scholastic achievement). These revisions were incorporated into the remaining measurements and guided the evaluation process.

The reliability estimates of the nutrition knowledge test, for each grade, as calculated by Kuder-Richardson formula 20 are listed in Tables 2-5. The level of reliability was relatively high with a range of .72 to .90. The number of students responding to the instrument is also identified.

Item analysis for the test guided the selection of the best items for inclusion in the final test version. The criteria for selecting the best test items were determined by: a) a discrimination index between .2 and .4 unless it is greater than .4 in which the standard deviation has to be greater than .2; b) an item difficulty between 30 percent and 70 percent; and c) items with effective distractors functioning at a level of one or more responses for each if 50 respondents took the test. When 50 respondents did not answer the test items, best items were selected on the first two criteria. Further, potentially good items were identified on the basis of "closeness of fit" to these two criteria (73).

Based on the above criteria and consideration for test length, four multiple-choice test items were selected for each of the criteria related to the goal indicators. The resulting 16 test items, keys and demographics for each grade are listed: Grade 3, Appendix D; Grade 5, Appendix E; Grade 8, Appendix F; Grade 11, Appendix G.

Nutrition Attitudes

Attitudinal inventories were developed to measure responses of students in grades 3, 5, 8, and 11 toward nutrition. Specifically, the goals and goal indicators provided the direction for the development of individual statements.

The format for the development of the statements consisted of generating an original pool of items. Positive aspects and negative aspects of each criterion were reflected in the item pool. After generating the original pool of items, a complete set was reproduced. Members of the research team reviewed the degree to which the

Table 2 Results of field test - Grade 3

Goal/Indicator	Number of Items	Reliability
Nutrition Knowledge[a]	56	.72
●healthy meal choices	12	.31
●healthy snack choices	12	.47
●nutrition and health/fitness	12	.40
●self-responsible choices/self-responsibility for food intake	11	.38
●nutrition	9	.38
Nutrition Attitudes[b]	28	.36
●healthy meal choices	5	.02
●healthy snack choices	6	-.14
●nutrition and health/fitness	5	.27
●self-responsible choices/self-responsibility for food intake	6	.37
●nutrition	6	.58
Nutrition Practices		
Food Choices[c]	20	.67
●sugar	4	.61
●sodium	4	.26
●fat	4	.31
●fiber	4	.23
●variety	4	.24
Reported Food Intake Practice[d]	34	n/a
●sugar	5	.61
●sodium	5	.49
●fat	5	-.02
●fiber	4	.35
●variety	9	.42
●beverage	1	n/a
●family meal environment	5	.44

[a] n = 108
[b] n = 111
[c] n = 114
[d] n = 111

Table 3 **Results of field test - Grade 5**

Goal/Indicator	Number of Items	Reliability
Nutrition Knowledge[a]	51	.83
●healthy meal choices	10	.44
●healthy snack choices	10	.50
●nutrition and health/fitness	11	.67
●self-responsible choices/self-responsibility for food intake	10	.35
●nutrition	10	.45
Nutrition Attidues[b]	26	.79
●healthy meal choices	8	.42
●healthy snack choices	2	.01
●nutrition and health/fitness	7	.40
●self-responsible choices/self-responsibility for food intake	5	.52
●nutrition	4	.69
Nutrition Practices		
Food Choices[c]	20	.71
●sugar	4	.49
●sodium	4	.29
●fat	4	.14
●fiber	4	.45
●variety	4	.27
Reported Food Intake[d]	34	n/a
●sugar	5	.52
●sodium	5	.47
●fat	5	.47
●fiber	4	.58
●variety	9	.29
● weight	1	n/a
●beverage	1	n/a
●family meal environment	5	-.24

[a] n = 99
[b] n = 70
[c] n = 101
[d] n = 105

Table 4 Results of field test - Grade 8

Goal/Indicator	Number of Items	Reliability
Nutrition Knowledge[a]	59	.90
●healthy meal choices	15	.72
●healthy snack choices	11	.62
●nutrition and health/fitness	12	.28
●self-responsible choices/self-responsibility for food intake	11	.69
●nutrition	10	.68
Nutrition Attitudes[b]	37	.83
●healthy meal choices	4	.58
●healthy snack choices	4	.38
●nutrition and health/fitness	8	.56
●self-responsible choices/self-responsibility for food intake	15	.62
●nutrition	6	.69
Nutrition Practices		
Food Choices[c]	20	.49
●sugar	4	.34
●sodium	4	-.04
●fat	4	.22
●fiber	4	.35
●variety	4	-.24
Reported Food Intake[d]	50	n/a
●sugar	9	.74
●sodium	10	.66
●fat	10	.77
●fiber	10	.67
●variety	6	.77
●beverage	2	.24
●cancer preventing foods	3	.68

[a] n = 86
[b] n = 81
[c] n = 76
[d] n = 70

Table 5 Results of field test - Grade 11

Goal/Indicator	Number of Items	Reliability
Nutrition Knowledge[a]	52	.88
●healthy meal choices	10	.59
●healthy snack choices	10	.20
●nutrition and health/fitness	11	.58
●self-responsible choices/self-responsibility for food intake	11	.77
●nutrition	10	.58
Nutrition Attitudes[b]	38	.81
●healthy meal choices	9	.54
●healthy snack choices	5	-.23
●nutrition and health/fitness	11	.63
●self-responsible choices/self-responsibility for food intake	8	.39
●nutrition	5	.75
Nutrition Practices		
Food Choices[c]	20	.67
●sugar	4	.50
●sodium	4	.22
●fat	4	.37
●fiber	4	.46
●variety	4	.17
Reported Food Intake[d]	50	n/a
●sugar	9	.66
●sodium	10	.61
●fat	10	.72
●fiber	10	.74
●variety	6	.70
●beverage	2	.15
●cancer preventing foods	3	.64

[a] n = 115
[b] n = 130
[c] n = 125
[d] n = 127

items represented the content and the distribution of favorability and unfavorability. Following this review, the selection of items which best represented the goals, goal indicators, criteria, and the scale value of favorability, unfavorability was finalized for field testing.

Directions for the use of the inventory instructed the respondent to indicate the extent of agreement or disagreement with each statement. For students in grades 3 and 5, graphic faces were used to depict the level of agreement or disagreement. For example, a smile was used for "strongly agree", no expression for "unsure", and a frown for "strongly disagree". These graphic faces were reproduced with consistency of expression. For students in grades 8 and 11, a five-point scale was used with the most appropriate response category ranging from "complete agreement" (5) to "complete disagreement" (1). A number 4 indicated "agree", 3 "unsure", 2 "disagree".

Data were collected, coded, and entered into the computer. For the data analysis, an intercorrelation matrix was computed across the respondents for each respective target population. Clusters were formed by identifying correlation coefficients between items which were larger than .30. In addition, interpretation of the impact of each statement on the reliability estimate of the total inventory was used to revise the instrument.

The reliability estimates for each attitudinal inventory for the students in grades 3, 5, 8, and 11 are listed in Tables 2-5. The reliability estimate for students in grade 3 was low (.36) whereas the range was .79 to .83, an acceptable value. These tables also include the number of items on each inventory and the number of respondents in the field test.

Based on field testing and the above criteria, the attitude inventory for each grade was revised. The revised attitudinal inventory consisting of 16 statements and the key for each grade (3, 5, 8, and 11) are found in Appendices D-G.

Nutrition Practices

Dietary assessment of target populations may be measured in many ways. A commonly used method is the determination of food consumption based on data assembled from representative population samples. The data collected are usually analyzed for nutrient content, trends in food consumption, indications of health status, and changes in practices. Information from these analyses can be used as the rationale for designing nutrition education programs for children (74).

The most effective ways of collecting accurate food consumption data are of continuing research interest. The accepted methods for evaluating food consumption include 1) inference - based on food disappearance and commodity reports, 2) observation - by unobstructive means (grocery sales slips) and obstructive means (plate waste study or observing actual choices), and 3) self reports - food frequency, 24-hour recall, food record, and food preference (75).

The selection of appropriate methods is an issue of importance in studies about food consumption of children. In school-based programs, impacts on food-related behaviors rather than on precise dietary intakes may be the more appropriate outcome (36). Techniques such as food frequency, food preference, and plate waste methods are examples of techniques which can be utilized to measure nutrition behavior.

The food frequency is a retrospective method used for the collection of food consumption data. Subjects are asked to indicate the frequency and extent to which they use various foods. Formats for collecting food frequency data are formally constructed and are organized into groups that have similar nutrients in common (76,77). This technique is reported in the literature as a means for evaluating nutrition behaviors of children, parents and school teachers (14, 26, 78, 79).

Another method which can be used to evaluate nutrition behavior is the food preference method. This method allows the subject to indicate which food from a list of food items the subject would eat if given a choice. The intent of most food preference studies is to determine the intake of specific foods or food groups (18, 21, 80, 81).

Plate waste is an observational method which can be used to gather data about food consumption. To determine the amount of food consumed, the amount of a food item not consumed is subtracted from the amount of the food item which was served. The amount of food consumed is often expressed as a percentage of the amount of food served (82). A number of plate waste studies have been conducted to assess food consumption of children (82-86). Data for plate waste studies are usually collected by either weighing waste using a gram scale or estimating the waste based on visual assessments. The comparison of these methods has been studied by numerous researchers (87-91).

For the nutrition behavior goal and goal indicators, three criteria served as the basis for the development of instrument measures. The measures for two of the criteria, healthy food choices and reported food intake, were included in the overall instruments for students in grades 3, 5, 8, and 11. The measure for the third criteria, observed food item selection and intake data, required the development of a separate instrument.

As a result of the field testing, a decision was made to solicit qualitative data. To obtain qualitative data, two open-ended questions were added to the instrument for grades 3, 5, 8 and 11. The questions focus on decisions about what to eat and major concerns about what is eaten.

Healthy food choices. To evaluate healthy food choices of students, a food choice assessment was developed to determine which food item or beverage students would choose if given a choice from a list of four options. As specified by the goal indicators, the Dietary Guidelines for Americans was used to develop a table of specifications for this component of the students' instruments (2). This resulted in the development of five scales: sugar, sodium, fat, fiber, and variety. Following the principles of test construction, 4 multiple choice questions were developed for each scale. Members of the research team reviewed the 20 test items, and revisions were made to the test items prior to field testing.

Following the field test of the 20 items included in the food choice assessment, data were coded, entered into the computer, and analyzed. The reliability estimates for this component of the instrument and each scale, as calculated by the Kuder-Richardson formula 20, are listed on Tables 2-5 (reliability estimates ranged from .49 to .71). The number of students in each grade responding to the instrument is also identified.

Based on field testing and the above criteria, revisions for the instruments were made. The questions, written in story format, were revised to be more general in nature. Four questions on choice of alcoholic beverages were added to the instruments for grades 8 and 11. The revised food choice assessments and keys, found in Appendices C - F, included five scales with a total of 20 questions for grades 3 and 5, and six scales with a total of 24 questions for grades 8 and 11.

Reported food intake. To measure students' reported food intake as the second criteria for this section, a nutrition practice assessment was developed. Based on the goal indicator for this component of the study, the Dietary Guidelines for Americans were used to develop a table of specifications. For the grade 3 instrument, the seven content scales specified for this measure included sugar, sodium, fat, fiber, variety, beverage, and family meal environment. The grade 5 instrument included the seven content scales included for grade 3 along with a scale for weight. The instruments for grades 8 and 11 included content scales for sugar, sodium, fat, fiber, variety, beverage, and cancer preventing foods. A pool of items was developed in statement format for consideration by members of the research team. Following this review, the items which best represented the nutrition behavior goal and goal indicator were finalized for field testing.

Directions for the use of the reported food intake assessment instructed the students to indicate the frequency with which their actions match the statements. For students in grades 3 and 5, graphic faces were used to depict the three possible responses. A face with a frown represented "no"; no expression on the face represented "sometimes"; and a smiling face was used for "yes". For students in grades 8 and 11, a four point scale was used (A = "seldom or never", B = "1 or 2 times a week", C = "3 or 4 times a week", and D = "almost daily").

Thirty-four statements were included in the reported food intake assessment field test for grade 3, and grade 5 contained 34 statements. The grades 8 and 11 assessment contained 50 statements. Data were collected, coded, and entered into the computer. The results of data analysis for nutrition practices of students in grades 3, 5, 8, and 11 are shown in Tables 2-5. To further validate the assessments for grade 3 and 5, a parent of each respondent in grade 3 was asked to complete the grade 3 assessment based on his or her perception of the child's behaviors. The correlation between student and parent responses was determined and is displayed in Table 6. While all of the correlation coefficients were positive, they had low values. The strongest correlation coefficient for

Table 6 Correlation of grade 3 students and parents' responses for students' reported food intake[a]

Goal/Indicator	Number of Items	Correlation Coefficient
Reported Food Intake[d]	34	n/a
●sugar	5	.36
●sodium	5	.03
●fat	5	.15
●fiber	4	.19
●variety	9	.19
●beverage	1	.12
●family meal environment	5	.03

[a] n = 45

reported food intake by students and their parental responses was for sugar (.36). Thus, while there were direct relationships between the variables (healthy food choices of children in third grade and perceptions of parents toward their children's food intake), the relationship is low. Other food intake categories had less than .20 correlation.

As a result of the field test, several revisions were made to the reported food intake assessments. The scale indicators for grades 3 and 5 were modified so that a smiling face represented "always"; no expression represented "sometimes"; and a frown represented "never". In addition, the number of statements was reduced to 22, and the revised assessment provided more even distribution of statements for each of six content scales (family meal environment was eliminated). The revised instruments for grades 3 and 5 are included in Appendices D and E. The scale indicators for the reported food intake assessment for grades 8 and 11 were expanded to a five-point scale (1 = "never", 2 = "1 or 2 times a week", 3 = "3 or 4 times a week", 4 = "5 or 6 times a week", and 5 = "daily"). Wording of statements was modified to improve clarity, and one statement was eliminated because it duplicated other statements. The revised reported food intake assessment for grades 8 and 11 (Appendices F and G) contains the original seven content scales.

Observed food intake. A research protocol was developed to ensure that the plate waste data from each school were collected and analyzed in a standardized fashion. In addition, procedures for program coding for the analysis of the data were established.

The research protocol, data collection instruments, and program coding procedures were field tested in May 1993. Both breakfast and lunch menus were obtained from a school food service district office prior to the field test. The name of the menu items were transferred from the menus to the three data collection forms prior to the field test. Observations during the field test site visit were recorded on these forms. Before estimating and weighing the plate waste, combination menu items were separated based on the USDA's meal component categories. The visual assessment of menu items on all trays was conducted first, followed by scraping and weighing of each menu item. In addition, each method was timed to establish standard time data for this portion of the field test.

Thirty-eight students were included in the breakfast plate waste study; 72 students participated in the lunch study. Table 7 reports the correlation coefficients of the methods for 1) each menu item served at breakfast and lunch and 2) each meal component based on the USDA categories. The high correlation coefficients depict a strong positive relationship between the visual method and the scrape/weight method for determining observed food intake. Thus, either method would be acceptable for measuring observed food intake. The time required to collect the breakfast plate waste data for the visual assessment method was 11.8 seconds per tray; for the scrape/weight method, 33.8 seconds per tray was required.

Table 7 Correlation of visual and scrape/weigh methods for determining observed food intake

Menu Item/Meal Component	Correlation Coefficient
Breakfast Menu Items[a]	.99
• Sausage	.93
• Diced Pears	.99
• Pancake	.97
• Milk	
Lunch Menu Items[b]	
• Meat Filling	.95
• Whole Kernel Corn	.96
• Ranch Style Beans	.93
• Flour Tortilla	.95
• Milk	.77
Meal Component[c]	
• Meat/Meat Alternate	.89
• Vegetable/Fruit	.93
• Bread/Bread Alternate	.93
• Milk	.93

[a] n = 38
[b] n = 72
[c] n = 110

The performance of the research protocol, data collection instruments, and program coding procedures were reviewed. In addition, the accuracy and time requirements of both the visual assessment and the scrape/weight methods were evaluated by the research team. As a result, the Observed Food Intake Research Protocol was modified to provide more details about customizing the forms for each school and identifying the students included in this component of the study. Even though a high correlation was found between the visual assessment and scrape/weigh methods, the visual assessment method was eliminated based on concerns about inter-rater reliability. Therefore, the procedures and forms for the visual assessment method were eliminated. No modifications were made to the Standard Weight Record, the Observed Food Intake Record for the scrape/weigh method, or the program coding procedures. These instruments are included in Appendix H.

Health and Physical Fitness Measures

The initial instruments to obtain health histories and to measure physical fitness were developed from fairly traditional pediatric and adolescent history and physical assessment forms. Through a period of several months and after submitting the forms for research team discussions, they were considerably simplified to obtain the essential elements which might be determined in the simplest manner. It was recognized that the history will be obtained by sending a printed form home with the student to be completed by the parent. It was therefore important to keep the form as short as possible and as clear as possible to enhance compliance in completion and return of the form.

The May 1993 revision of the history form was field tested at Lubbock High School. Of the 30 students assessed, 25 medical history forms were returned and these formed the basis for revisions. Most significantly, the parent will be asked to enter the child's social security number on the history form rather than having the examiner place the I.D. number on the form before it is sent home. This will simplify tasks for the examiners; the majority of students did not know their social security numbers and/or did not have the number with them at the physical fitness assessment. Teachers may need to remind students to bring their social security numbers with them prior to the data collection team's site visit. (In the field study a number of the students did not know or had to go to their lockers to get their social security numbers.) The history form was revised to make it more readable for parents.

Development of the essential elements of the physical assessment was more complex than was development of the history form. Initially tasks were included to determine the Tanner stage of puberty. This would require that separate and discrete examination rooms plus gowns be available. It was recognized that such a luxury would not be available in most (if any) schools and would add to the time and complexity of the examination without a proportionate increase in understanding of health status. Percentile height for age would yield, inferentially, similar information without a need to undress the student. As the final form was developed for field testing, it was not necessary to undress the child. The total examination will be achieved by removal of the shoes in measuring height and weight. The triceps skin folds can be measured without undressing and the measurement of abdominal skin folds can most often be achieved by pulling up shirt or unbuttoning with a simple towel drape when necessary. Again, some changes were made after the initial field test. The student will enter his/her age to facilitate percentiale determination for height and weight.

The greatest problem in assessing health status was encountered in the discussion of whether urine and/or blood tests should be done. The information to be gained from determination of cholesterol, lipoproteins, blood or urine sugar, and hemoglobin/meatocrit had to be balanced against the legal liability incurred in the obtaining of blood; the time and complexity of obtaining urine specimens; and the expense of the determinations (cost of phlebotomists, cost of centrifuges to spin down hematocrits, laboratory charges for blood chemistries); and the possible negative effect on compliance in sending home complex informed consent documents without ability to explain to parents what was/was not involved.

The medical history, obtained from parent(s), and the physical assessment can be done by non-physician personnel at the undergraduate or graduate level. It is important that the examiners be standardized in their approach to measurements. A manual of instructions was prepared; the examiners were cross-trained so that each can perform each of the tasks in the assessment in a standard manner.

Copies of the revised history and physical examination forms are found in Appendix I, as is an initial copy of the guide for examiners. By using the schematic charts for percentiles in height, weight, and adiposity, the examiners will be able to determine quickly and enter results in the appropriate places on the form.

Scholastic Achievement

Two major testing programs have been established by Texas state law. The criterion-referenced testing program (Texas Assessment of Academic Skills) is a criterion-referenced test to determine how well students have mastered the Texas essential elements at a particular grade. The norm-referenced test (Norm-referenced Assessment Program for Texas) assesses a range of skills and can compare the achievement of Texas students with other students across the country.

The Texas Assessment of Academic Skills (TAAS) testing program has been administered to approximately 3.1 million students in grades 3, 5, 7, 9, and 11 since October 1990. A redesigned student assessment program was adopted by the State Board of Education in April 1992. Administration of the TAAS was reduced to grades 4, 8, and 10. Test administrations occur in March and May of each year.

In addition to the TAAS tests, in 1991 the State Board of Education authorized the development of a nationally standardized norm-referenced test for students in Grades 3 through 11. The Norm-referenced Assessment Program for Texas (NAPT) was administered the first time in April 1992. The NAPT test includes the subject areas of reading, mathematics, language, social studies, and science. The form for recording scholastic achievement is in Appendix K.

Parents' Instruments

The instruments for the parents included: nutrition knowledge, nutrition attitude, nutrition practices (healthy food choices and reported food intake), three open-ended questions on food habits, family medical history and demographics. While the development of the instruments for parents was similar to the principles outlined for students, each of the sections will be briefly explained.

Nutrition Knowledge

The goals and goal indicators (criteria), provided the table of specifications for the development of individual test items. For the nutrition knowledge component, eight criteria provided the guidelines. Following the principles of test construction, approximately 10 test items were developed for each criterion. Members of the research team reviewed the test items and revisions were made prior to field testing.

Following the field test of 81 items on nutrition knowledge, data were coded, entered into the computer, and analyzed. The number of participants in the field test was 37; the reliability estimate for the instrument was .84 which is considered a high level (Table 8).

Factor analysis provided the statistical support to reduce the number of criteria in the original instrument from eight to seven. Using the seven criteria and item analysis as guidance, revisions were made to reduce test items to four per criterion. This resulted in 28 items for the final number in the knowledge instrument. This instrument is reproduced in Appendix K.

Nutrition Attitudes

Based on the goals and goal indicators (criteria), and principles of instrument development, an attitude inventory was developed. The number of criteria in the original instrument was seven. An original pool of items was generated. A research team review was made to determine the degree to which the items represented the content and the distribution of favorability and unfavorability. Following revisions, 36 items were selected for reproduction for the field test.

Directions for the administration of the inventory instructed the respondent to indicate the extent of agreement or disagreement with each statement on a five-point Likert type scale. The response category ranged from 5 (complete agreement), to 1 (complete disagreement). For the points in between, 2 indicated "disagree", 3 "unsure", and 4 "agree".

Table 8 Results of field test - Parents

Goal/Indicator	Number of Items	Reliability
Nutrition Knowledge[a]	81	.84
●nutrition needs	10	.38
●Dietary Guidelines for Americans	10	.36
●healthy meal choices	10	.54
●healthy snack choices	9	-.60
●nutrition and health/fitness	10	.74
●nutrition and scholastic achievement	11	-.20
●self-responsible choices/self-responsibility for food intake	11	.03
●nutritional life/consumer skills	10	.63
Nutrition Attitudes[b]	36	.83
●Dietary Guidelines for Americans	6	.08
●healthy meal choices	7	.54
●healthy snack choices	1	n/a
●nutrition and health/fitness	6	.65
●nutrition and scholastic achievement	4	.62
●self-responsible choices/self-responsibility for food intake	11	.67
●food traditions	1	n/a
Nutrition Practices		
Food Choices[c]	24	.77
●sugar	4	.60
●sodium	4	.16
●fat	4	.48
●fiber	4	.50
●variety	4	.02
●alcohol	4	.80
Nutrition Practices[d]	50	
●sugar	9	.71
●sodium	10	.63
●fat	10	.79
●fiber	10	.73
●variety	6	.81
●beverage	2	-.53
●cancer preventing foods	3	.73

[a]n = 37
[b]n = 58
[c]n = 52
[d]n = 56

The results of the data analysis for nutrition attitudes of parents are shown in Table 8. The reliability estimate for the attitude inventory was .83 with 58 parents responding; this level of reliability is in the acceptability range. The number of statements was reduced to 18 for the final instrument. The final instrument and key are found in Appendix K.

Nutrition Practices

The goal and goal indicators (criteria) for nutrition practices served as the basis for the development of instrument measures described in this section. Specifically, the criteria of healthy food choices and reported food intake were utilized.

Food choices. To evaluate food choices of parents, those questions developed for students in grades eight and eleven were used. In the section on the development of children's food choices described earlier, 24 multiple choice questions were written. The six scales included sugar, sodium, fat, fiber, variety, and alcohol.

The number of participants who completed the food choice assessment during the field test was 52. The reliability estimates for this component of the instrument and each subscale, as calculated by the Kuder-Richardson formula 20, are listed on Table 8.

Revisions based on the field testing were made. The questions (written in story format) were revised to be more generic in nature. In addition, the assessment was revised to allow the parents to indicate two responses to each question. The first response was to indicate the parents' food choice while in the presence of their children. The second response to each question was to be answered based on the parents' choice if their children were not present. The revised food choice assessment and key for parents, found in Appendix L, included six scales with 24 questions.

Reported food intake. The second criteria for this section focuses on parents' reported food intake; to measure this component, an assessment was developed. Based on the respective goal indicator for the study, the Dietary Guidelines for Americans was used to develop a table of specifications (2). The seven content scales specified for this measure included sugar, sodium, fat, fiber, variety, beverage, and cancer preventing foods. A pool of items was developed in statement format for consideration by a subject matter specialist and an evaluation specialist. Following this review, the items which best represented the nutrition behavior goal, goal indicator, and criteria were finalized for field testing.

Directions for the use of the reported food intake assessment instructed the parents to indicate the frequency with which their actions match the statements. A four point scale was used to represent responses to each statement (A = "seldom or never", B = "1 or 2 times a week", C = "3 or 4 times a week", and D = "almost daily").

The reported food intake for parents contained 50 statements for the field test. Data were collected, coded, and entered into the computer. The results of data analysis for reported food intake of parents are shown in Table 8.

As a result of the field test, several revisions were made to the reported food intake assessments. The scale indicators were expanded to a five-point scale (1 = "never", 2 = "1 or 2 times a week", 3 = "3 or 4 times a week", 4 = "5 or 6 times a week", and 5 = "daily"). Wording of statements were modified to improve clarity, and one statement was eliminated because of duplication. The revised nutrition practice assessment and keys for parents (Appendix K) contains seven content scales and 49 statements.

Educators' Instruments

Instrument development for the educators was guided by the evaluation principles identified in the section on children's instruments. In particular, the instrument for the educators was based on the goals and goal indicators (criteria) validated in the Delphi technique. These goals and goal indicators (criteria) formed the table of specifications for the assessment. The questionnaire included sections on nutrition knowledge, nutrition attitudes, nutrition practices, and demographics. In addition, responses were solicited on a) educators' perceptions of nutrition education support by administrators and food service personnel, and b) the school cafeteria serving as a learning laboratory.

Nutrition Knowledge

For the nutrition knowledge goal indicator, nine criteria were validated. These criteria guided the writing of 10 questions per criterion. The multiple choice test items were reviewed by the content specialist, evaluation specialist, and members of the project team; suggestions for revision were implemented prior to field testing.

The 90 multiple choice items were field tested with 45 of 200 educators responding for a 23% response rate. The low return rate may be due to the timing of the field test, near the end of the school year. Data were coded, entered into the computer, and analyzed. Findings from the data analysis included the need to reduce the criteria from nine to eight. The reliability estimate of .64 is reported in Table 9; this reliability needs to be improved. Using the item analysis, 32 multiple choice test items were prepared for the final instrument. This instrument and the key are found in Appendix L.

Table 9 Results of field test - Educators

Goal/Indicator	Number of Items	Reliability
Nutrition Knoweldge[a]	90	.64
●nutrition needs	10	-.06
●Dietary Guidelines for Americans	10	-.16
●healthy meal choices	10	.21
●healthy snack choices	9	.23
●nutrition and health/fitness	10	.51
●nutrition and scholastic achievement	11	.42
●self-responsible choices/self-responsibility for food intake	11	.24
●food safety/sanitation	10	-.16
●effective methods of teaching nutrition	10	.04
Nutrition Attitudes[b]	63	.92
●nutritional needs	4	.73
●functions of nutrients in maintaining health	4	.69
●Dietary Guidelines for Americans	10	.52
●healthy meal choices	7	.52
●healthy snack choices	4	.34
●nutrition and health/fitness	6	.61
●nutrition and scholastic achievement	8	.87
●self-responsible choices/self-responsibility for food intake	7	.34
●food safety/sanitation	5	.50
●nutrition education	8	.49
Nutrition Practices		
Food Choices[c]	24	
●sugar	4	.58
●sodium	4	.07
●fat	4	.26
●fiber	4	.21
●variety	4	.25
●alcohol	4	.66

[a]n = 45
[b]n = 45
[c]n = 43

63

Nutrition Attitudes

The nutrition attitudes of educators were assessed by generating a pool of favorable and unfavorable items based on the 10 criteria related to the goal. Following a review of the items for content, positive/negative expressions, the team members offered suggestions for revisions which were incorporated.

Statistics on the attitudinal inventory are listed in Table 8. Of the 63 attitudinal statements administered in the field test, 27 were selected for inclusion in the final instrument. The reliability estimate for the instrument was .92, a high level. Since the number of criteria were reduced (from 9 to 8), adjustments were made accordingly to decrease statements so that the appropriate concepts were represented. The final instrument and key are reproduced in Appendix L.

Nutrition Practices

For the nutrition behavior goals and goal indicators (criterion), healthy food choices, served as the basis for the development of this component of the educators' instrument. A food choice assessment was developed to determine which food item or beverage educators choose if given a choice from a list of four options. As specified by the goal indicator, the Dietary Guidelines for Americans was used to develop a table of specifications for this component of the students' instruments (2). This resulted in the development of six scales: sugar, sodium, fat, fiber, variety, and alcohol. Following the principles of test construction, 4 multiple choice questions were developed for each scale. Members of the research team reviewed the 24 test items, and revisions were made to the test items prior to field testing.

Following the field test of the 24 items included in the food choice assessment, data were coded, entered into the computer, and analyzed. The number of educators who completed the food choice assessment during the field test was 43. The reliability estimates for the subscales, as calculated by the Kuder-Richardson formula 20, are listed on Table 9.

Based on field testing and the above criteria, revisions for the instruments were identified. Since this instrument was consistent with the parents, the same revisions were made (see page 52). Also, two responses for each questions were designed. The revised food choice assessment and key for educators, found in Appendix L, included six scales with 24 questions.

Nutrition Education

To assess the nutrition education needs of educators, a series of questions were formulated. These questions focused on the identification of a nutrition education coordinator in the school, resources available, effective teaching methods for "all" students and for minority students, the type of nutrition education available in the cafeteria, the cafeteria environment and coordination and need for nutrition education. These responses will be related to those of other target populations.

Food Service Personnel Instruments

Instruments for the food service personnel were planned and prepared by following principles of evaluation; the content was guided by the goals and goal indicators (criteria) validated in the Delphi technique. The food service personnel includes the managers who are in administrative roles and the workers who are employed on location in the school cafeterias.

The questionnaire for the **food service managers** included sections on nutrition knowledge, nutrition attitudes, and management knowledge, questions on the reinforcement of nutrition knowledge and attitudes in the cafeteria, and demographics. For the **food service workers**, sections of the instrument focused on nutrition knowledge, nutrition attitudes, and demographics.

Specific questions were included in the questionnaire on administrative support of meals offered which reinforce nutrition concepts taught in the classroom; educator support of school food service; and food service personnel coordination with educators to reinforce nutrition concepts. A question was included in the final instrument on whether food service managers encounter problems in procuring and/or preparing nutritious and appealing food economically. If the response is positive, food service managers will be asked to identify inservice training and/or materials to help them with solving these problems.

Nutrition Knowledge

The nutrition knowledge goal indicator for food service personnel had nine related criteria. These validated criteria guided the development of approximately 10 multiple-choice test questions per criterion. These items were reviewed by the content specialist, evaluation specialist, and the project team. Revisions were made based on suggestions.

The 91 multiple-choice test items were field tested with 40 food service managers and 27 food service workers responding. Data were coded, entered into the computer, and analyzed. Results of the pilot test are shown in Tables 10 and 11; the reliability estimate for the food service managers was .77; For the food service workers, the reliability estimate was .76. These reliability estimates are within the acceptable range for usability. Based on the factor analysis, the nine criteria were reduced to eight and the test items were adjusted accordingly. Using item analysis for the most discriminating items and the eight criteria, 32 multiple choice test items were prepared for the final instruments. Instruments and keys are found in Appendix M.

Table 10 Results of field test - Food service managers

Goal/Indicator	Number of Items	Reliability
Nutrition Knowledge[a]	91	.77
●nutrition needs	10	.14
●Dietary Guidelines for Americans	10	.22
●healthy meal choices	10	.48
●healthy snack choices	9	.39
●nutrition and health/fitness	10	.40
●nutrition and scholastic achievement	11	.25
●self-responsible choices/self-responsibility for food intake	11	.38
●nutritional life/consumer skills	10	.15
●food safety/sanitation	10	.56
Nutrition Attitudes[b]	41	.94
●Dietary Guidelines for Americans	10	.66
●healthy meal choices	7	.72
●healthy snack choices	5	.69
●nutrition and health/fitness	6	.78
●nutrition and scholastic achievement	8	.83
●food safety/sanitation	5	.65
Management Knowledge[c]	80	.90
●marketing	10	.62
●nutrition and menu planning	10	.70
●procurement	10	.42
●food production	10	.44
●service	10	.38
●sanitation and safety	10	.40
●food acceptability	10	.38
●financial management	10	.46

[a] n = 40
[b] n = 41
[c] n = 41

Table 11 Results of field test - Food service workers

Goal/Indicator	Number of Items	Reliability
Nutrition Knowledge[a]	91	.76
●nutrition needs	10	.41
●Dietary Guidelines for Americans	10	-.42
●healthy meal choices	10	.50
●healthy snack choices	9	.20
●nutrition and health/fitness	10	.40
●nutrition and scholastic achievement	11	-.07
●self-responsible choices/self-responsibility for food intake	11	.09
●nutritional life/consumer skills	10	-.02
●food safety/sanitation	10	.38
Nutrition Attitudes[b]	41	.80
●Dietary Guidelines for Americans	10	.31
●healthy meal choices	7	.22
●healthy snack choices	5	.68
●nutrition and health/fitness	6	.49
●nutrition and scholastic achievement	8	.78
●food safety/sanitation	5	.26

[a] n = 27
[b] n = 27

Nutrition Attitudes

A pool of positive and negative items, based on the six validated criteria, was generated to assess the nutrition attitudes of food service personnel. When criteria were identical to criteria for other target populations, the related attitudinal statements were evaluated for inclusion in the pool. A panel of experts reviewed the statements, including a statistician. Forty-one statements were prepared for field testing.

The results of the field test are displayed in Tables 10 and 11. The reliability estimate for the food service managers was .94; food service workers had .80 as the reliability estimate. These reliability estimates are acceptable and lend confidence to the instrument. From the statistical findings, the six criteria were reduced to five (healthy meal choices and healthy snack choices were combined as health food choices) and 15 statements. The inventory and key are shown in Appendix M.

Management Knowledge

A process similar to the nutrition knowledge assessment was used to develop the multiple choice test items for the management knowledge section of the food service managers' instrument. The eight validated criteria guided the development of this assessment section with ten items written per criterion. A panel of experts reviewed the 80 test items prior to field testing.

Field test data were coded, entered into the computer and analyzed. Table 10 portrays the results of the field test: 41 food service personnel responded to the management knowledge assessment and the reliability estimate was .90 (very acceptable). Item analysis guided the selection of items for the final instrument. Since the factor analysis revealed stability of the eight original criteria, 32 items were selected for the final instrument. The instrument and the key are reproduced in Appendix M.

Analysis of School Food Service Menu

Methods were developed to analyze the adequacy of school food service menus. As specified by the goal and goal indicators, the USDA menu patterns and the Dietary Guidelines for Americans provided the standards against which school food service menus were compared (92,2). Three types of data collection forms were developed for this component of the study: menu spreadsheet, Menu Analysis USDA Menu Patterns, and Menu Analysis Dietary Guidelines for Americans.

A menu spreadsheet was developed so that information about menu items and serving sizes provided by each school could be transferred to a standardized form prior to analysis. This form was designed to accommodate a one week menu and can be used for breakfast and/or lunch menus.

The USDA Menu Pattern forms were developed to determine the adequacy of school food service menus when compared to the appropriate USDA pattern. The forms incorporated the standards specified by the USDA Menu Patterns for Breakfast - Ages 6 and Up; Lunch - Group III; Lunch - Group IV; and Lunch - Group V. Each form was designed to include the appropriate meal components and standard serving sizes. When this information is compared to the information recorded on the menu spreadsheet, a compliance score can be determined.

The final form was developed to evaluate the information on the menu spreadsheet according to the Dietary Guidelines for Americans. The standards for this form were based on the criteria provided in Project 2001: Nutrition for a New Century, a project of the Southwest Region of USDA (92). The project was designed to enhance the implementation of the Dietary Guidelines for Americans by schools in the region. The Dietary Guidelines for Americans form was designed to produce a compliance score based on a comparison of the Project 2001: Nutrition for a New Century criteria with information recorded on the menu spreadsheet.

A research protocol was developed to ensure that menu data from each school were collected and analyzed in a standardized fashion. In addition, procedures for scoring the forms were established.

The research protocol, data collection instruments, and scoring procedures were reviewed by members of the research team and were field tested in May, 1993. Both breakfast and lunch menus were obtained from a school food service district office for the field test. Information about menu items and serving sizes were transferred from the menus to the menu spreadsheet. The information on the menu spreadsheet was evaluated using the appropriate USDA Menu Pattern form and the Dietary Guidelines for Americans form to determine the compliance score. The results of the field test are provided in Table 12.

The performance of the research protocol, data collection instruments, and scoring procedures were reviewed and evaluated by the research team. As a result, minor modifications were made to the time schedule for the steps listed in the Menu Analysis Research Protocol. The Menu Spreadsheet required no modifications. Although the USDA Breakfast Menu Pattern - Ages 6 and up required no changes, the total weekly servings of bread/bread alternate was revised to allow for more accurate scoring of the USDA Lunch Menu Patterns. No changes or corrections were deemed necessary for the Dietary Guidelines for Americans form. The original scoring procedures were expanded into two sections. The first section described the scoring required on the data collection forms prior to data entry. The second section specified the program coding required to analyze the data to determine compliance scores. The data collection forms and procedures are found in Appendix N.

Table 12 Results of field test - Analysis of school food service menu

Standard/Meal	% Compliance Score
Menu Pattern Compliance/Breakfast	100
Menu Pattern Compliance/Lunch	95
Dietary Guidelines Compliance/Breakfast	42
Dietary Guidelines compliance/Lunch	44

Observed Operational Practices of School Food Service.

Methods were developed to evaluate the appropriateness of operational practices of school food service facilities. Specifically, this component of the study focused on menu planning practices and implementation, types of ingredients used in preparation of menu items, methods of preparation, and condiments offered during meal service.

As specified by the goal and goal indicators, the USDA menu patterns and the Dietary Guidelines for Americans provided the standards against which the observed operational practices were compared. The form designed for this component of the study accommodates a menu for one day and can be used for breakfast and/or lunch menus. The data collection form consists of two sections.

The first section of the instrument, "Menu Items Planned versus Served", was developed so that planned menu items and portion sizes could be compared to menu items and portion sizes served on the day of the researchers' site visit to the school. Space was allowed on the form to indicate the menu items which were specified on the written menu provided by the school food service facility and the portion size for each menu item. When observations are compared to the information recorded on this section of the data collection form, a compliance score can be determined.

The second section of the form, "Observation of Practices", was developed to evaluate the observed practices of the food service facility according to the Dietary Guidelines for Americans. The standards for this form were based on the criteria and suggestions provided in Project 2001: Nutrition for a New Century (92). This form was designed to produce a compliance score based on a comparison of the Project 2001: Nutrition for a New Century (92) criteria and suggestions.

A research protocol was developed to ensure that the data from each school were collected and analyzed in a standardized fashion. In addition, procedures for scoring the forms were established.

The research protocol, data collection instrument, and scoring procedures were reviewed by members of the research team and were field tested in May 1993. Both breakfast and lunch menus were obtained from a school food service district office prior to the field test. Information about menu items and portion sizes were transferred from the menus to the "Menu Items Planned versus Served" section of the instrument. The information on the menu spreadsheet was compared with the menu items and portion sizes served during the site observation of the field test. Observations during the field test site visit were recorded on the "Observation of Practices" section and were compared to the Project 2001: Nutrition for a New Century (92) criteria and suggestions in order to obtain a compliance score. The results of the field test are provided in Table 13.

The performance of the research protocol, data collection instruments, and scoring procedures were reviewed and evaluated by the research team. As a result, minor modifications were made to the time schedule for the steps listed in the Menu Analysis Research Protocol. The "Menu Items Planned versus Served" section was expanded to include not only the incidence portion size of a substitution but also the appropriateness of the substitution. No changes or corrections were deemed necessary for the "Observation of Practices" section of the data collection form. The original scoring procedures were expanded to include the scoring of the appropriateness of substitutions and by the addition of program coding procedures (See Appendix N).

Table 13 Results of field test: Observed operational practices of school food service

Standard/Meal	% Compliance Score
Menu Items Planned versus Served/Breakfast	67
Menu Items Planned versus Served/Lunch	86
Observation of Practices/Breakfast	29
Observation of Practices/Lunch	32

71

Nutrition Education

To assess the nutrition education needs of the food service personnel, objective items were prepared and administered. These questions included topics on promoting nutrition education in the cafeteria, the coordination and support of nutrition education by teachers and adminstrators, the number of nutrition education activities held and the reinforcement of nutrition education concepts taught in the classroom. Following the field testing, additional questions were added to determine whether food service personnel needed help in planning appropriate meals, procuring nutritious food, and preparing appealing meals which follow the Dietary Guidelines for Americans.

Administrators' Instruments

The instrument development for administrators focused on attitudes of administrators toward nutrition education, administrative problems associated with nutrition education, administrative support of nutrition education and demographics. Questions were also designed to assess the knowledge of the relationship of nutrition to health, physical fitness and scholastic achievement of students.

Some of the topics included in the demographic section were questions on gender, ethnic background, and level of education. Other questions focused on educational background in nutrition, health-related problems of students, desire to learn more about nutrition, and the preferred type of training format for nutrition education. Specific questions included were on nutrition education in the school (key concepts taught, resources of teachers, effective methods of teaching nutrition to all students and to multicultural/minority students, inservice education, and the school cafeteria as a learning environment). Statements on the attitudinal inventory from the educators were revised for inclusion in this assessment for administrators.

After members of the research team had reviewed the instrument, revisions were made and the instrument was prepared for field testing. A random sample of administrators in the local district participated in the field test. A motivational tool, a complimentary dinner for two at a local restaurant, was used to foster a larger response rate.

Of the 100 administrators contacted, 44 responded for a return rate of 44%. Of the 44 responses, 42 of the instruments had usable data. The reliability estimate of .71 for knowledge is listed in Table 14; the reliability could be improved although the sample is rather small and increasing the respondents could enhance the reliability. Based on the statistical analysis, revisions were made. In particular, the multiple choice items were examined for level of difficulty and correlation coefficient. The revised instrument and key are found in Appendix O. The reliability estimates for the attitude subscales are displayed in Table 14.

Table 14 Results of field test - Administrators

Goal/Indicators	Number of Items	Reliability
Nutrition Knowledge[a] relationships between: nutrition, health, physical fitness, and scholastic achievement	15	.71
Nutrition Attitudes[b]	20	
● healthy food choices	3	.16
● nutrition and health/fitness	3	.74
● self-responsibility for food selection	2	.42
● nutrition and scholastic achievement	3	.64
● nutritional needs	3	.72
● nutritional education	3	.66
● functions in nutrients in maintaining health	3	60

[a] n = 42
[b] n = 42

Procedures

Instrument Application

Questionnaires

Prior to the administration of the instruments, approval will be solicited from superintendents of randomly selected public and private schools (P). Following approval, the principals and teachers of the selected school sites will be contacted for their cooperation and coordination of the assessment (P).

Students. Based on the field tests, educators in randomly selected schools will be contacted about the administration of the instruments approximately two weeks before the collection of data. The educators will be asked to distribute the Parental Consent Forms to each student so that there is sufficient time for parents to return the signed consent forms prior to the research team site visit. (P).

The educators will be requested to administer the student questionnaires during a normal length class period. According to the field test results, the instruments can be completed in a 50-minute class period. The completed questionnaires will be picked up by members of the data collection team on their site visit or mailed in a stamped addressed return envelope/packet by schools that will not have a site visit.

Parents. The distribution of the parents' instruments will be handled by the classroom teacher. Teachers will disseminate the instruments and the Student Consent Form to the children to take home to their parents. The cooperation and support of the teachers will be needed to maximize the data collection. The deadline for the receipt of the instruments and the Student Consent Forms need to be scheduled prior to the site team visit (P).

Educators. The educators (teachers) will receive correspondence about their role in this project approximately two weeks prior to the data collection. Directions for administration of the instruments for their students will be shared with the educators. In addition, the educators' questionnaires will be mailed; their completed instruments will be collected during the site visit by team members or mailed to project headquarters (O).

Food Service Personnel. The instruments will be mailed to the food service personnel for completion prior to the site visit. Self-stamped addressed envelopes will be enclosed with the questionnaires so that they can be returned. If the completed instruments are not received within a two week period, a reminder notice will be sent (M).

Administrators. After receiving approval from the school superintendents, the administrators of the randomly selected schools will be invited to participate in the study. The instruments will be mailed to the administrators with a self-stamped addressed envelope for their return. A follow-up letter will be sent to the non-respondents after two weeks (P).

Health and Physical Fitness

During the class period in which the instruments are being administered, a subsample of the students will participate in the physical fitness measurement. Only those students with parental permission will be considered to participate in the physical fitness assessment. Trained professionals will collect data on health and physical fitness including a blood finger stick, height and weight, fitness and percent body fat.

Records of Health and Scholastic Achievement

With parental consent forms, access to health records and scholastic achievement can be realized. With identification of those students with parental consent to participate in the study, the site team can record health information and scholastic achievement from individual student files in the administrative offices of the school.

Public schools have permanent records on the health of students. School children are checked at grades 3, 5, 8, and 9. Information, held at each school building, addresses immunization, screening for vision and hearing, height, weight, and dental records. Spinal screenings are taken at grades 6 and 8. A finger stick will be taken by a trained healthh professional for those students with parental approval.

With parental consent, access to the achievement scores of individual students will be granted. The achievement scores are property of the individual school districts and this confidential information is filed in administrators' offices. Scholastic achievement scores will be recorded by the research team for those students with approval forms (J).

Plate Waste Records

Food Intake Research Protocol (N) will be utilized to collect plate waste data. The data will be analyzed based on the Program Coding Procedures in order to determine food consumption of meal components and specific menu items.

Menu Analysis

The procedures detailed in the Menu Analysis Research Protocol (P) will be followed to collect data for this section. The Menu Analysis data will be evaluated based on the Scoring and Program Coding Procedures for Menu Analysis.

Site Observation of Food Service Practices

The Menu Analysis Research Protocol procedures will be followed to collect data for the observed practices. This data will be analyzed and evaluated based on the Scoring and Program Coding Procedures for Site Observation (N).

Selection and Training of Data Collection Teams

Advertisements for members of data collection teams were placed in the Texas Tech University Personnel Office during the summer; memorandums were sent to department chairs in the College of Human Sciences and to the Dean of the College of Education. In addition, personal calls were made to various professionals on campus to solicit qualified personnel.

Applicants were interviewed individually and job responsibilities were discussed. Four teams were employed to collect data throughout the state of Texas. The data collection procedures were distributed to the team members. An agenda for the training sessions to ensure standard procedures in collecting the data is found in Appendix R.

In addition to the training conducted by professionals, a practice session was held at a local school cafeteria. The team members participated in the assessment of the food service operation and established the standard weight of the food offered and measured food intake of selected students.

Securing Required Approvals

The Texas Tech University Committee for the Protection of Human Subjects approved the project "Nutrition Education and Training Needs in Texas" May 27, 1993 (see Q). The approval remains in place for one year and an extension can be requested.

Requests for approval for the data collection (from students, their parents, teachers, administrators, and food service personnel) will be made to the school superintendents. In the initial letter, the project will be explained. In addition, approval will be sought to contact principals of the schools in the district. Following the contact with principals, teachers will be contacted to seek their approval and cooperation. (See Q for letters seeking required approval).

For the Student Consent Form, parents will be contacted for completion and approval of the form. The Student Consent Forms will be sent home from the school with the children. The parents will be asked to complete the form and return it to the school with their child. (See P).

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APPENDIX A

DELPHI PANEL MEMBERS

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APPENDIX B

SAMPLE SELECTION

Selection of Public Schools

The sample of the 696 public schools selected for this study contained three types of schools - elementary, junior high, and high schools, so that data can be collected from students in the third, fifth, eighth, and eleventh grade. The sample was proportionally divided into the three types of schools to represent the proportion of three types of schools in the public school population.

	Elementary	Junior High	High School	Total
Number of Schools	3,266	1,029	1,024	5,319
Percentage of Schools	61.40	19.35	19.25	100
Number of Schools Selected	427	135	134	696

Selection of Elementary Schools

The selection of the 427 elementary schools was determined by school variables of student ethnicity composition, student family income, and student achievement. A stratification table is constituted by the three variables, and the number and the percentage of elementary schools in each subpopulation were computed. The 427 schools were selected proportionally from the strata of the stratification table.

Elementary Schools with Over 34% of At-risk Students

	Over 50% Hispanic	Over 50% Anglo	No Dominant Ethnic Group	Total
Over 50% Low Income				
# of Schools	740	125	278	1,143
% of Schools	22.65	3.83	8.51	35.0
# Selected	97	16	36	149
Under 50% Low Income				
# of Schools	34	242	48	324
% of Schools	1.04	7.41	1.47	9.92
# Selected	4	32	6	42
Number of Schools Selected				191

Elementary Schools with Under 34% of At-risk Students

	Over 50% Hispanic	Over 50% Anglo	No Dominant Ethnic Group	Total
Over 50% Low Income				
# of Schools	168	211	218	597
% of Schools	5.14	6.46	6.67	18.28
# Selected	22	28	28	78
Under 50% Low Income				
# of Schools	19	1,116	67	1,202
% of Schools	0.58	34.17	2.05	36.80
# Selected	3	146	9	158
Number of Schools Selected				236

Total Number of Elementary Schools Selected: 427

Selection of Junior High Schools

Following the same procedure applied to elementary schools, 135 junior high schools were selected.

Junior High Schools with Over 34% of At-risk Students

	Over 50% Hispanic	Over 50% Anglo	No Dominant Ethnic Group	Total
Over 50% Low Income				
# of Schools	185	29	73	287
% of Schools	17.98	2.82	7.09	27.89
# Selected	24	4	10	38
Under 50% Low Income				
# of Schools	28	340	85	453
% of Schools	2.72	33.04	8.26	44.02
# Selected	3	44	11	59
Number of Schools Selected				97

Junior High Schools with Under 34% of At-risk Students

	Over 50% Hispanic	Over 50% Anglo	No Dominant Ethnic Group	Total
Over 50% Low Income				
# of Schools	23	8	9	40
% of Schools	2.24	0.78	0.87	3.89
# Selected	3	1	1	5
Under 50% Low Income				
# of Schools	4	231	14	249
% of Schools	0.39	22.45	1.36	24.20
# Selected	1	30	2	33
Number of Schools Selected				38

Total of Junior High Schools Selected: 135

Selection of High Schools

Following the same procedure applied to elementary schools and junior high school schools, 134 high schools were selected.

High Schools with Over 34% of At-risk Students

	Over 50% Hispanic	Over 50% Anglo	No Dominant Ethnic Group	Total
Over 50% Low Income				
# of Schools	111	25	20	156
% of Schools	10.84	2.44	1.95	15.23
# Selected	15	3	3	21
Under 50% Low Income				
# of Schools	68	467	88	623
% of Schools	6.64	45.61	8.59	60.84
# Selected	9	60	12	81
Number of Schools Selected				102

High Schools with Under 34% of At-risk Students

	Over 50% Hispanic	Over 50% Anglo	No Dominant Ethnic Group	Total
Over 50% Low Income				
# of Schools	19	7	0	26
% of Schools	1.86	0.68	0	2.54
# Selected	3	1	0	4
Under 50% Low Income				
# of Schools	8	196	15	219
% of Schools	0.78	19.14	1.46	21.38
# Selected	1	25	2	28
Number of Schools Selected				32

Total Number of High Schools Selected: 134

Selection of Non-public Schools

The sample of the 54 non-public schools selected for this study also contained three types of schools (elementary, junior high, and high schools) to collect data from students in the third, fifth, eighth, and eleventh grade. The sample of 54 schools was proportionally divided into the three types of schools.

	Elementary	Junior High	High	Total
Number of Schools	282	33	97	412
Percentage of Schools	68.45	8.01	23.54	100
Number of Schools Selected	37	4	13	54

No information was available on the school variables of student ethnicity composition, student family income, and student achievement. The sample of 54 non-public schools was selected from the populations of non-public elementary, junior high, and high schools.

Selection of Schools from Each Stratum

Systematic sampling was applied to the selection of schools from each stratum for public and non-public schools. Starting from a randomly selected school, every eighth schools thereafter was selected until the desired sample size was achieved. With the predicted response rate (67%), the final sample should include 500 of schools.

Expected Distribution of Public and Non-public Schools

	Public	Non-Public	Total
Number of Schools Selected	464	36	500

Expected Number of Public Schools Selected

	Elementary	Junior High	High	Total
Number of Schools Selected	285	90	89	464

Expected Number of Elementary Schools Selected

	Over 50% Hispanic	Over 50% Anglo	No Dominant Ethnic Group	Total
Elementary Schools with Over 34% of At-risk Students				
Over 50% Low Income	65	11	24	100
Under 50% Low Income	3	21	4	28
Elementary Schools with Under 34% of At-risk Students				
Over 50% Low Income	15	18	19	52
Under 50% Low Income	2	97	6	105
Total Number of Elementary Schools Selected				285

Expected Number of Junior High Schools Selected

Junior High Schools with Over 34% of At-risk Students

	Over 50% Hispanic	Over 50% Anglo	No Dominant Ethnic Group	Total
Over 50% Low Income	16	3	6	25
Under 50% Low Income	2	30	7	39

Junior High Schools with Under 34% of At-risk Students

	Over 50% Hispanic	Over 50% Anglo	No Dominant Ethnic Group	Total
Over 50% Low Income	2	1	1	4
Under 50% Low Income	1	20	1	22
Total Number of Junior High Schools Selected				90

Expected Number of High Schools Selected

High Schools with Over 34% of At-risk Students

	Over 50% Hispanic	Over 50% Anglo	No Dominant Ethnic Group	Total
Over 50% Low Income	9	2	2	13
Under 50% Low Income	6	40	8	54
High Schools with Under 34% of At-risk Students				
Over 50% Low Income	2	1	0	3
Under 50% Low Income	1	17	1	19
Total Number of Junior High Schools Selected				89

Expected Number of Non-public Schools Selected

	Elementary	Junior High	High	Total
Number of Schools Selected	25	3	8	36

APPENDIX C

FIELD TESTING

- Field Test Schedule
- Pilot Test Schedule
- Field Test Correspondence

SUMMARY OF FIELD TEST ADMINISTRATION

TARGET POPULATION	INSTRUMENT	SITE	DATE
CHILDREN			
Grade 3	Knowledge, Attitudes, Behavior (Food Choices, Reported Food Intake), Demographics	West Ward Elementary School, Slaton Independent School District	May 25
Grade 5	Knowledge, Attitudes, Behavior (Food Choices, Reported Food Intake), Demographics	Frenship Intermediate School, Frenship Independent School District	May 10 to May 25
Grade 8	Knowledge, Attitudes, Behavior (Food Choices, Reported Food Intake), Demographics	Atkins Junior High, Alderson Junior High, Mackenzie Junior High, and O.L. Slaton Junior High, all from the Lubbock Independent School District	May 16 to June 3
Grade 11	Knowledge, Attitudes, Behavior (Food Choices, Reported Food Intake), Demographics	Coronado High School, Lubbock High School, and Monterey High School, all from Lubbock Independent School District	May 16 to June 3
Grade 11	Health and Physical Fitness	Lubbock High School, Lubbock Independent School District	May 25
Grades K - 5	Plate Waste Record	Casey Elementary School, Frenship Independent School District	May 25 to May 27
PARENTS	Knowledge, Attitudes, Behavior (Food Choices, Reported Food Intake), Demographics, Family Medical History, Student Consent Form	Westward Elementary School, Slaton Independent School District	May 15 to May 25

SUMMARY OF FIELD TEST ADMINISTRATION

TARGET POPULATION	INSTRUMENT	SITE	DATE
EDUCATORS	Knowledge, Attitudes, Behavior (Food Choice), Demographics, Nutrition Education Support, School Cafeteria/Learning Laboratory	Coronado High School, Lubbock High School, and Monterey High School, all from Lubbock Independent School District	May 25 to June 3
FOOD SERVICE PERSONNEL	Knowledge, Attitudes, Management Knowledge, Reinforcement of Nutrition Concepts, Demographics	Lubbock Independent School District	May 20 to June 7
FOOD SERVICE OPERATION	Analysis of School Food Service Menu	Lubbock Independent School District	May 3 to May 7
FOOD SERVICE OPERATION	Observed Operational Practices	Casey Elementary School, Frenship Independent School District	May 26 to May 27
ADMINISTRATORS	Knowledge, Attitudes, Administrative Support of Nutrition Education, (nutrition - health - scholastic achievement), Demographics, Administrative Problems with Nutrition Education	Lubbock Independent School District	May 25 to June 3

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PILOT TEST ADMINISTRATION			
TARGET POPULATION	INSTRUMENT	SITE	DATE
CHILDREN			
Grade 3	Knowledge, Attitudes, Behavior (Food Choices, Reported Food Intake), Demographics	Roosevelt Independent School District	September 3 to September 17
Grade 5	Knowledge, Attitudes, Behavior (Food Choices, Reported Food Intake), Demographics	Roosevelt Independent School District	September 3 to September 17
Grade 8	Knowledge, Attitudes, Behavior (Food Choices, Reported Food Intake), Demographics	Roosevelt Independent School District	September 3 to September 17
Grade 11	Knowledge, Attitudes, Behavior (Food Choices, Reported Food Intake), Demographics	Roosevelt Independent School District	September 3 to September 17

May 7, 1993

Dear Parent:

As you probably know, nutrition can make a major difference in the total development of the child. Teachers and the principal at your child's school have agreed to participate in a nutrition survey. As a result of the study, teachers, administrators, and food service personnel will have assistance with nutrition instruction.

Your child has been selected to answer questions on food and nutrition. Please allow your child to participate in the project by signing the attached consent form and sending it back to the teacher. In addition, please fill out the questionnaire and send it to your child's teacher as soon as possible.

Thank you for your help. A favorite family recipe is enclosed; we hope that you enjoy it!

Sincerely,

Ruth E. Martin, Co-Principal Investigator
Professor, ENR/HM

Linda C. Hoover, Co-Principal Investigator
Assistant Professor, ENR/HM

May 11, 1993

Dear Parent/Guardian:

Last week we sent home materials related to the Nutrition Education Training Needs Assessment in Texas Project that we are conducting. We want to make you aware that we will not, at this time, be conducting the physical exam portion of the study. However, if you have not returned the questionnaire "Family Information," please do so as soon as possible.

As a final request, please take a few minutes to complete the attached questionnaire "Nutrition Practice Assessment - Grade 3 (Parents)" and return it in the enclosed stamped, self-addressed envelope. Note that the purpose of this questionnaire is to collect information about what you know about your 3rd grade child's food practices. Again, the information you provide will be confidential and will be used only for research purposes.

If you have questions, please call us at 742-3068. Thank you for your cooperation.

Sincerely,

Ruth E. Martin, Co-Principal Investigator
Professor, ENR/HM

Linda C. Hoover, Co-Principal Investigator
Assistant Professor, ENR/HM

Enclosures

INSTRUCTIONS FOR ADMINISTERING NET PROJECT FIELD TEST INSTRUMENTS

TO: Teachers
FR: Ruth E. Martin & Linda C. Hoover
DT: May 10, 1993
RE: NET Project Field Testing

Enclosed are the following field test instruments for the NET Project:

I. CHILDREN The following instruments (a - e) should be completed during class time. Directions are provided on each instrument. You may answer students' questions on how to respond but not what the response should be. Please assure the students that this is not a test that will affect their grade. It is estimated that it will take over an hour to complete these instruments. The instruments do not have to be completed in one session but do need to be completed in the order listed below. Please record the amount of time required to complete each instrument.

a. "Demographics - Grade 5"
b. "Nutrition Knowledge Assessment - Grade 5"
c. "Nutrition Attitude Assessment - Grade 5"
d. "Food Practice Assessment - Grade 5"
e. "Food Choice Assessment - Grade 5"

II. PARENTS Instruments (a - f) are packaged in brown envelopes and should be sent home with the students to their parents. These need to be returned to the school as soon as possible, no later than May 21. Your reminding the students to bring their completed parental forms will be helpful.

a. "Cover Letter"
b. "Parent/Guardian Demographics"
c. "Medical History - Grade 5"
d. "Nutrition Knowledge Assessment - Parents"
e. "Nutrition Attitude Assessment - Parents"
f. "Nutrition Practice Assessment - Parents"
g. "Nutrition Choice Assessment - Parents"

We will be coming to pick up the field test instruments in about 10 days. If you have questions, feel free to call us at 742-3068. Thank you so much!

May 20, 1993

Dear School Food Service Manager:

We are conducting a nutrition education project, funded by the Texas Department of Human Services, to assess the nutrition knowledge, attitudes, and behaviors of school children, teachers, administrators, and school food service personnel. We would like you to participate in the field testing of the enclosed nutrition education questionnaires.

Please complete the enclosed questionnaires labeled "Food Service Manager" and give the questionnaires labeled "Food Service Personnel" to one of your employees to complete. Return both the Food Service Manager and Food Service Personnel questionnaires in the business reply envelope as soon as possible, but no later than June 7.

To show our appreciation for your cooperation, we will place your name in a drawing for a complimentary dinner for two at Gardski's (value of $20.00). To be eligible, place your name, address, and phone number on the yellow index card enclosed with the questionnaires.

If you have questions, feel free to call us at 742-3068. Thank you for your assistance.

Sincerely,

Ruth E. Martin, Co-Principal Investigator
Professor, ENR/HM

Linda C. Hoover, Co-Principal Investigator
Assistant Professor, ENR/HM

Enclosures

May 20, 1993

Dear School Food Service Professional:

We are conducting a nutrition education project, funded by the Texas Department of Human Services, to assess the nutrition knowledge, attitudes, and behaviors of school children, teachers, administrators, and school food service personnel. We would like you to participate in the field testing of the enclosed nutrition education questionnaires.

Please complete the enclosed questionnaires labeled "Food Service Manager". Return questionnaires in the business reply envelope as soon as possible, but no later than June 7.

To show our appreciation for your cooperation, we will place your name in a drawing for a complimentary dinner for two at Gardski's (value of $20.00). To be eligible, place your name, address, and phone number on the yellow index card enclosed with the questionnaires.

If you have questions, feel free to call us at 742-3068. Thank you for your assistance.

Sincerely,

Ruth E. Martin, Co-Principal Investigator
Professor, ENR/HM

Linda C. Hoover, Co-Principal Investigator
Assistant Professor, ENR/HM

Enclosures

APPENDIX D

INSTRUMENT
DEVELOPED FOR
GRADE 3

- Questionnaire
- Key
- Demographics

Student Name:______________________________
Last First

School Name:______________________________

Birth date:____-____-____ Age:_____
month day year

AN ASSESSMENT OF NUTRITION EDUCATION & TRAINING NEEDS IN TEXAS

Grade 3

Project Sponsored by
Texas NET Program
P.O. Box 149030
Austin, TX 78714-9030

Texas Tech University
MS 41162
Lubbock, TX 79409

TEXAS

NET

NUTRITION EDUCATION & TRAINING

Dear Third Grader:

YOU have been selected to take part in a very important research project. This project is sponsored by the Texas Department of Human Services.

Your cooperation and input are needed to respond to this questionnaire on nutrition education. The responses of participants across the state of Texas will help guide the direction for more effective nutrition education in the schools.

Please follow these guidelines in responding to the questions:

- -read the directions to each section and every question carefully and respond; some of the sections have different directions and response patterns.
- -after you have finished the questionnaire, check each page to be sure that you have answered all the questions.
- -your answers to the questionnaire will be confidential; the results will be used for research purposes only.

THANK YOU for being a part of this special study!

DEMOGRAPHICS

DIRECTIONS: Please respond to the following questions by drawing a circle around the best answer on every page. Answer the questions to the best of your ability.

1. You are a:
   1. girl
   2. boy

2. Your ethnic background:
   1. African-American
   2. American Indian or Alaskan Native
   3. Asian or Pacific Islander
   4. Hispanic/Spanish
   5. White

3. During the last year, who has taught you about healthy food?
(CIRCLE YES OR NO FOR EACH RESPONSE)

• family members	1. Yes	2. No
• friends	1. Yes	2. No
• school cafeteria employee	1. Yes	2. No
• school nurse	1. Yes	2. No
• teacher	1. Yes	2. No

other, please write in____

4. During the last year, where have you learned about healthy food?
(CIRCLE YES OR NO FOR EACH RESPONSE)

• books	1. Yes	2. No
• clubs (4-H, Scouts)	1. Yes	2. No
• magazines, newspapers	1. Yes	2. No
• t.v., radio	1. Yes	2. No

other, please write in____

5. How many times per week do you eat breakfast served in the school cafeteria?
(CIRCLE ONLY ONE OF THE FOLLOWING NUMBERS)

0
1
2
3
4
5

6. If you do not eat the school breakfast, what is the main reason?
(CIRCLE ONLY ONE ANSWER)
01. am not hungry
02. do not feel good
03. do not like food served
04. no food is ready
05. no time to eat the food
06. on a diet to lose weight

other, please write in________________________________

7. On a school day, where do you usually eat breakfast?
(CIRCLE ONLY ONE ANSWER)
1. at home
2. at school cafeteria
3. brought breakfast to school
4. restaurant/fast food operation

other, please write in________________________________

8. How many times per week do you eat lunch served in the school cafeteria?
(CIRCLE ONLY ONE OF THE FOLLOWING NUMBERS)
0
1
2
3
4
5

9. If you do not eat the school lunch, what is the main reason?
(CIRCLE ONLY ONE ANSWER)
1. costs too much
2. do not like food served
3. friends do not eat school lunch
4. lunch room is not pleasant and relaxing
5. more fun to eat away from school
6. on a diet to lose weight
7. wait in lunch line too long
8. want to bring my own lunch

10. On a school day, where do you usually eat lunch?
(CIRCLE ONLY ONE ANSWER)
1. at home
2. at school cafeteria
3. brought lunch to school
4. restaurant/fast food operation

other, please write in____

11. If you have snacks during the school day, do you usually get them from:
(CIRCLE ONLY ONE ANSWER)
01. a snack bar at school
02. a nearby store
03. a vending machine at school
04. club members
05. do not eat snacks at school
06. home
07. teacher

other, please write in______________________________

12. Would you like to know about:
(CIRCLE YES OR NO FOR EACH RESPONSE)

• healthy food choices	1. Yes	2. No
• food and fitness	1. Yes	2. No
• how I can make better food selections	1. Yes	2. No
• how food affects my school work	1. Yes	2. No
• nutrition	1. Yes	2. No

other, please write in______________________________

13. Do you think that the school cafeteria should be a cheerful and relaxing room for students to eat their school meals?
1. Yes 2. No

NUTRITION KNOWLEDGE ASSESSMENT

Directions: For each item draw a circle around the number of the best (most correct) answer to the question.

1. Cereal and macaroni belong to which food group?
   1. bread
   2. fruit
   3. meat
   4. milk

2. Which of the following would increase the risk of heart disease?
   1. eating too many vegetables
   2. not getting enough sleep
   3. taking too few vitamin pills
   4. weighing more than you should

3. The person responsible for the food I eat is my:
   1. friend
   2. parent
   3. self
   4. teacher

4. The most important meal of the day for me to do well in school is:
   1. breakfast
   2. brunch
   3. lunch
   4. dinner

5. Breakfast should include:
   1. all snack foods
   2. any healthy food
   3. foods shown on t.v.
   4. only cereal and milk

6. Being healthy means:
   1. being able to fight
   2. feeling and looking good
   3. not wanting to play
   4. staying out of trouble

7. People care what they eat because they:
   1. are going to pay for the food
   2. know what they eat affects their future health
   3. want to eat foods that they like
   4. worry about having enough food

8. When I am hungry at school I:
   1. can think about school work
   2. can think better about school work
   3. cannot think about school work
   4. have no problems thinking

9. For a food low in FAT, I would choose:
   1. apple
   2. candy
   3. cereal
   4. cookies

10. I need the most fuel from food when I am:
    1. reading
    2. running
    3. sleeping
    4. studying

11. If we are not careful about what we eat we may have problems with:
    1. food expenses
    2. health information
    3. sickness
    4. the food chain

12. I can keep high energy in the morning by:
    1. eating a good breakfast
    2. eating lots the night before
    3. not eating breakfast
    4. sleeping an extra hour

13. Which drink is a good source of CALCIUM?
    1. apple juice
    2. cola
    3. fruit punch
    4. milk

14. I need more food energy to:
    1. clear the table
    2. play soccer
    3. ride my bike
    4. walk to school

15. Kids who skip breakfast tend to:
    1. not eat until the next day
    2. eat more later in the day
    3. eat less later in the day
    4. skip several meals

16. Hungry school kids are likely to have study skills which are:
    1. fair
    2. fine
    3. good
    4. poor

NUTRITION ATTITUDE ASSESSMENT

__Directions__: Please put an "X" on the face which shows how you feel about each sentence.

		Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
1.	I need to eat many kinds of foods.	☺	☺	😐	☹	☹
2.	Exercise is important to health.	☺	☺	😐	☹	☹

		Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
3.	I like to choose foods that keep me healthy.	☺	☺	😐	☹	☹
4.	I have trouble thinking about school work when I am hungry.	☺	☺	😐	☹	☹
5.	I like to try new foods.	☺	☺	😐	☹	☹
6.	Choosing the right snack is important to my health.	☺	☺	😐	☹	☹
7.	I do not like to learn about healthy foods at school.	☺	☺	😐	☹	☹
8.	School work is easier when I eat breakfast.	☺	☺	😐	☹	☹
9.	Breakfast is the most important meal of the day.	☺	☺	😐	☹	☹
10.	Exercise is a waste of time.	☺	☺	😐	☹	☹
11.	It is easier to take a vitamin pill than think about what I eat.	☺	☺	😐	☹	☹
12.	I do better on my work at school when I am hungry.	☺	☺	😐	☹	☹
13.	I like to eat different kinds of vegetables.	☺	☺	😐	☹	☹
14.	Foods I eat now will not affect my future health.	☺	☺	😐	☹	☹

		Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
15.	I like it when someone tells me what to eat.	☺	☺	😐	☹	☹
16.	Eating food helps me to think better.	☺	☺	😐	☹	☹

FOOD CHOICE ASSESSMENT

Directions: For each item draw a circle around the number of the food or beverage that you would most likely choose.

1. Which one of the following would you choose for a mid-morning snack?
   1. blueberry muffin
   2. candy bar
   3. frosted cupcake
   4. orange wedges

2. Which one of the following foods would you choose for breakfast?
   1. buttered biscuit
   2. dry toast with jam
   3. jelly doughnut
   4. waffle with syrup

3. Which one of the following would you choose to drink with your breakfast?
   1. Kool-aid
   2. milk shake
   3. orange juice
   4. soft drink

4. Which one of the following would you choose for an afternoon snack?
   1. potato chips
   2. pretzels
   3. tortilla chips
   4. unsalted popcorn

5. Which one of the following sandwiches would you choose for lunch?
   1. broiled chicken burger
   2. cheeseburger
   3. hamburger
   4. hot dog

6. Which one of the following breads would you use to make a sandwich for lunch?
   1. french bread
   2. hamburger bun
   3. white bread
   4. whole wheat bread

7. Which one of the following would you choose for a frozen snack?
   1. banana split
   2. chocolate sundae
   3. ice cream cone
   4. juice bar

8. Which one of the following would you choose to eat with a breakfast of orange juice, poached egg, and milk?
   1. cheese slice
   2. grapefruit half
   3. peach slices
   4. toast

9. Which one of the following snacks would you choose from a vending machine?
   1. cheese puffs
   2. popcorn
   3. potato chips
   4. pretzels

10. Which one of the following meats would you choose for your evening meal?
    1. bacon sandwich
    2. ham slice
    3. link sausage
    4. pork chop

11. Which one of the following desserts would you take in your sack lunch?
    1. candy bar
    2. chocolate chip cookies
    3. frosted cupcakes
    4. graham crackers

12. Which one of the following would you choose to eat with a serving of chicken?
    1. corn on the cob
    2. french fries
    3. macaroni
    4. spaghetti

13. Which one of the following would you choose to drink with a snack of cheese, crackers, and slice of turkey?
    1. apple juice
    2. iced tea
    3. milk shake
    4. soft drink

14. Which one of the following types of crackers would you choose for a snack?
   1. cheese crackers
   2. ritz crackers
   3. saltine crackers
   4. whole wheat crackers

15. Which one of the following meats would you choose for a sandwich?
   1. bologna
   2. ham
   3. salami
   4. turkey

16. If you were having friends over, which one of the following drinks would you serve?
   1. Kool-aid
   2. fruit punch
   3. orange juice
   4. soft drink

17. Which of the following would you drink with a cookie?
   1. chocolate milk
   2. coke float
   3. skim milk
   4. whole milk

18. Which one of the following would you choose to eat with **baked chicken, rice, and milk**?
   1. biscuit
   2. corn bread
   3. gravy
   4. green beans

19. If you had friends over, which one of the following snacks would you serve?
   1. apple slices
   2. cheese and crackers
   3. dill pickles
   4. potato chips

20. Which one of the following would you choose to drink with a snack of **orange slices and raisin cookies**?
   1. apple juice
   2. Kool-aid
   3. milk
   4. soda

REPORTED FOOD INTAKE

__Directions__: Please put an "X" on the face which shows what you __really__ do.

		Always	Sometimes	Never
1.	I eat at least 2 servings of fruit each day.	☺	😐	☹
2.	I eat at least one meal each day with my family.	☺	😐	☹
3.	I eat sweets every day.	☺	😐	☹
4.	I salt foods before tasting.	☺	😐	☹
5.	I eat at least 3 servings of vegetables each day.	☺	😐	☹
6.	I drink skim or low-fat milk.	☺	😐	☹
7.	I eat whole wheat bread or corn tortillas.	☺	😐	☹
8.	I eat at least 6 servings of bread, tortillas, cereal, rice or pasta each day.	☺	😐	☹
9.	I drink at least 6 glasses of water each day.	☺	😐	☹
10.	I often prepare my own meals.	☺	😐	☹

		Always	Sometimes	Never
11.	I drink regular soft drinks almost everyday.	☺	😐	☹
12.	I eat salted chips, pretzels, or popcorn every day.	☺	😐	☹
13.	I put butter or margarine on my bread or rolls.	☺	😐	☹
14.	I eat at least 2 servings of milk, yogurt or cheese each day.	☺	😐	☹
15.	I decide what foods to buy when I spend my money.	☺	😐	☹
16.	I eat raw vegetables every day.	☺	😐	☹
17.	I eat American cheeses or cheese spreads daily.	☺	😐	☹
18.	I eat at least 2 servings of meat, fish, poultry or beans each day.	☺	😐	☹
19.	I eat bologna, pepperoni or salami every day.	☺	😐	☹
20.	I drink Kool-aid or sweetened fruit drinks every day.	☺	😐	☹
21.	I take a vitamin pill each day.	☺	😐	☹
22.	I eat corn, beans, or peas every day.	☺	😐	☹

Directions: Please answer the following questions by writing your answer in the space provided.

1. What helps you decide what to eat?

____

____

____

____

____

____

2. My major concern about what I eat is:

____

____

____

____

____

____

This is the end of the Questionnaire

THANK YOU FOR PARTICIPATING!

Key for Questionnaire - Grade 3

GOAL/Criteria	Question Number(Answer Number)
NUTRITION KNOWLEDGE	
• healthy food choices	1(1), 5(2), 9(1), 13(4)
• nutrition and health/fitness	2(4), 6(2), 10(2), 14(2)
• self-responsibility for food selection	3(3), 7(2), 11(3), 15(2)
• nutrition and scholastic achievement	4(1), 8(3), 12(1), 16(4)
NUTRITION ATTITUDE	
• healthy food choices	+1, +5, +9, +13
• nutrition and health/fitness	+2, +6, -10, -14
• self-responsibility for food selection	+3, -7, -11, -15
• nutrition and scholastic achievement	+4, +8, -12, +16
NUTRITION BEHAVIORS	
Food Choices	
• sugar	1(4), 3(3), 11(4), 16(3)
• sodium	4(4), 10(4), 15(4), 19(1)
• fat	2(2), 5(1), 7(4), 17(3)
• fiber	6(4), 9(2), 12(1), 14(4)
• variety	8(4), 13(1), 18(4), 20(3)
Reported Food Intake	
• sugar	3, 11, 20
• sodium	4, 12, 17
• fat	6, 13, 19
• fiber	7, 16, 22
• variety	1, 5, 8, 14, 18, 21
• beverage	9
• family meal environment	2, 10, 15

BEST COPY AVAILABLE

Demographic Results - Grade 3[a]

CHARACTERISTICS	Frequency	%
Gender:		
• Female	53	44.2
• Male	65	54.2
• No Response	2	1.7
Ethnicity:		
• African-American	15	12.5
• American Indian or Alaskan Native	5	4.2
• Asian or Pacific Islander	2	1.7
• Hispanic	50	41.7
• White	46	38.3
• No Response	2	1.7
People who taught you about food which is good for you:[b]		
• School cafeteria employee	51	42.5
• School nurse	52	43.3
• Teacher	77	64.2
Learned about food which is good for you from:[b]		
• Books	48	40.0
• Clubs	11	9.2
• Family members	56	46.7
• Magazine or newspapers	12	10.0
• Television or radio	30	25.0
• Net Materials		
Number of times per week you eat breakfast:		
• None	3	2.5
• One	2	1.7
• Two	4	3.3
• Three	3	2.5
• Four	4	3.3
• Five	12	10.0
• Six	3	2.5
• Seven	86	71.7
• No Response	3	2.5
Reason for not eating breakfast:		
• Am not hungry	42	35.0
• Do not feel good	26	21.7
• Do not like food served	2	1.7
• No food is available	3	2.5

CHARACTERISTICS	Frequency	%
• No one prepares the food	2	1.7
• No time to eat the food	11	9.2
• On a diet to lose weight	3	2.5
Where breakfast is usually eaten on a school day:		
• At home	70	58.3
• At school cafeteria	48	40.0
• No Response	2	1.7
Number of times student eats breakfast served in the school cafeteria:		
• None	52	43.3
• One	8	6.7
• Two	6	5.0
• Three	8	6.7
• Four	4	3.3
• Five	40	33.3
• No Response	2	1.7
Number of times per week you eat lunch:		
• None	0	0.0
• One	3	2.5
• Two	2	1.7
• Three	1	0.8
• Four	0	0.0
• Five	21	17.5
• Six	1	0.8
• Seven	90	75.0
• No Response	2	1.7
Where lunch is usually eaten on a school day:		
• At home	9	7.5
• At school cafeteria	102	85.0
• Restaurant/fast food operation	6	5.0
• No Response	3	2.5
Number of times student eats lunch served in the school cafeteria:		
• None	12	10.0

BEST COPY AVAILABLE

CHARACTERISTICS	Frequency	%
• One	4	3.3
• Two	2	1.7
• Three	5	4.2
• Four	2	1.7
• Five	92	76.7
• No Response	3	42.5
Reason for not eating the school lunch:		
• Costs too much	4	3.3
• Do not like food served	40	33.3
• Friends do not eat school lunch	0	0.0
• Lunch room is not pleasant and relaxing	2	1.7
• More fun to eat away from school	4	3.3
• On a diet to lose weight	1	0.8
• Wait in lunch line too long	9	7.5
• Want to bring my own lunch	40	33.3
• No Response	20	16.7

[a]n = 120
[b]n = multiple responses allowed

APPENDIX E

INSTRUMENT
DEVELOPED FOR
GRADE 5

- Questionnaire
- Key
- Demographics

Student Name:______________________________________
Last First

School Name:______________________________________

Birth date:____-____-____ Age:_____
month day year

AN ASSESSMENT OF NUTRITION EDUCATION & TRAINING NEEDS IN TEXAS

Grade 5

Project Sponsored by
Texas NET Program
P.O. Box 149030
Austin, TX 78714-9030

Texas Tech University
MS 41162
Lubbock, TX 79409
FAX (806) 742-3042

TEXAS

NET

NUTRITION EDUCATION & TRAINING

Dear Fifth Grader:

YOU have been selected to take part in a very important research project. This project is sponsored by the Texas Department of Human Services.

Your cooperation and input are needed to respond to this questionnaire on nutrition education. The responses of participants across the state of Texas will help guide the direction for more effective nutrition education in the schools.

Please follow these guidelines in responding to the questions:

- -read the directions to each section and every question carefully and respond; some of the sections have different directions and response patterns.
- -after you have finished the questionnaire, check each page to be sure that you have answered all the questions.
- -your answers to the questionnaire will be confidential; the results will be used for research purposes only.

THANK YOU for being a part of this special study!

DEMOGRAPHICS

DIRECTIONS: Please respond to the following questions by drawing a circle around the best answer on every page. Answer the questions to the best of your ability.

1. You are a:
   1. girl
   2. boy

2. Your ethnic background:
   1. African-American
   2. American Indian or Alaskan Native
   3. Asian or Pacific Islander
   4. Hispanic/Spanish
   5. White

3. During the last year, who has taught you about healthy food?
(CIRCLE YES OR NO FOR EACH RESPONSE)

• family members	1. Yes	2. No
• friends	1. Yes	2. No
• school cafeteria employee	1. Yes	2. No
• school nurse	1. Yes	2. No
• teacher	1. Yes	2. No

other, please write in________________________________

4. During the last year, where have you learned about healthy food?
(CIRCLE YES OR NO FOR EACH RESPONSE)

• books	1. Yes	2. No
• clubs (4-H, Scouts)	1. Yes	2. No
• magazines, newspapers	1. Yes	2. No
• t.v., radio	1. Yes	2. No

other, please write in________________________________

5. How many times per week do you eat breakfast served in the school cafeteria?
(CIRCLE ONLY ONE OF THE FOLLOWING NUMBERS)

0
1
2
3
4
5

6. If you do not eat the school breakfast, what is the main reason?
(CIRCLE ONLY ONE ANSWER)

01. am not hungry
02. do not feel good
03. do not like food served
04. no food is ready
05. no time to eat the food
06. on a diet to lose weight

other, please write in________________________________

7. On a school day, where do you usually eat breakfast?
(CIRCLE ONLY ONE ANSWER)

1. at home
2. at school cafeteria
3. brought breakfast to school
4. restaurant/fast food operation

other, please write in________________________________

8. How many times per week do you eat lunch served in the school cafeteria?
(CIRCLE ONLY ONE OF THE FOLLOWING NUMBERS)

0
1
2
3
4
5

9. If you do not eat the school lunch, what is the main reason?
(CIRCLE ONLY ONE ANSWER)

1. costs too much
2. do not like food served
3. friends do not eat school lunch
4. lunch room is not pleasant and relaxing
5. more fun to eat away from school
6. on a diet to lose weight
7. wait in lunch line too long
8. want to bring my own lunch

10. On a school day, where do you usually eat lunch?
(CIRCLE ONLY ONE ANSWER)

1. at home
2. at school cafeteria
3. brought lunch to school
4. restaurant/fast food operation

other, please write in________________________________

11. If you have snacks during the school day, do you usually get them from:
(CIRCLE ONLY ONE ANSWER)
01. a snack bar at school
02. a nearby store
03. a vending machine at school
04. club members
05. do not eat snacks at school
06. home
07. teacher

other, please write in ______________________________

12. Would you like to know about:
(CIRCLE YES OR NO FOR EACH RESPONSE)

• healthy food choices	1. Yes	2. No
• food and fitness	1. Yes	2. No
• how I can make better food selections	1. Yes	2. No
• how food affects my school work	1. Yes	2. No
• nutrition	1. Yes	2. No

other, please write in ______________________________

13. Do you think that the school cafeteria should be a cheerful and relaxing room for students to eat their school meals?
1. Yes 2. No

NUTRITION KNOWLEDGE ASSESSMENT

Directions: For each item draw a circle around the number of the best (most correct) answer to the question.

1. Which food group is missing from a menu of applesauce, scrambled eggs, toast and tomato juice?
   1. cereal, bread, rice, pasta
   2. fruit
   3. milk, yogurt, cheese
   4. vegetable

2. A breakfast of peanut butter and banana slices on toast with a glass of milk is LACKING in which food group?
   1. bread
   2. fruit
   3. meat
   4. vegetable

3. The person responsible for the food I eat is my:
   1. friend
   2. parent
   3. self
   4. teacher

4. Eating balanced meals is associated with a:
   1. definite negative attitude toward school and work
   2. positive attitude toward food, negative attitude toward work
   3. more positive attitude toward school and work
   4. no change in the attitudes toward school or work

5. My lunch at school should include what part of my daily calories?
   1. 1/5
   2. 1/4
   3. 1/3
   4. 1/2

6. Diseases of the heart and blood vessels can be caused by poor:
   1. exercise
   2. food choices
   3. hygiene
   4. sleep habits

7. My food choices should depend on ALL of the following EXCEPT:
   1. how I feel when I eat
   2. size of serving
   3. what I usually eat
   4. what others usually eat

8. Children who have a lack of IRON will show:
   1. high mental development and high physical activity
   2. high mental development and low physical activity
   3. low mental development and high physical activity
   4. low mental development and low physical activity

9. Which snack would be better for your health?
   1. a candy bar and banana
   2. chocolate cake and milk
   3. cheese and apple slices
   4. raisin cookies and orange juice

10. A major benefit of FIBER is that it:
   1. does not cost very much
   2. helps prevent frequent colds
   3. helps prevent cancer
   4. is found in all foods

11. People choose the food they eat to:
    1. balance their daily intake
    2. check for high energy foods
    3. eat and watch television
    4. eat foods that they like

12. Children who participate in school breakfast programs are more likely to have:
    1. improved test scores and less absenteeism
    2. improved test scores but more absenteeism
    3. lower test scores and less absenteeism
    4. lower test scores but more absenteeism

13. I can prevent nutritional deficiencies by:
    1. eating a balanced diet
    2. eating lots of grapefruit
    3. exercising every day
    4. taking prescribed medicine

14. I need more food energy to:
    1. clear the table
    2. play soccer
    3. ride my bike
    4. walk to school

15. If we are not careful what we eat, we may have problems with:
    1. food expenses
    2. health information
    3. serious diseases
    4. the food chain

16. To do well at school and at play I should eat:
    1. a variety of foods
    2. only carbohydrate foods
    3. only dairy products
    4. only protein foods

NUTRITION ATTITUDE ASSESSMENT

Directions: Please put an "X" on the face which shows how you feel about each sentence.

		Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
1.	It is important to eat a variety of foods each day.	☺	☺	😐	☹	☹
2.	Choosing healthy foods are important to maintain a healthy weight.	☺	☺	😐	☹	☹
3.	It is important to learn about nutrition at school.	☺	☺	😐	☹	☹
4.	School work is easier when I eat breakfast.	☺	☺	😐	☹	☹
5.	Breakfast is the most important meal of the day.	☺	☺	😐	☹	☹
6.	Too much salt is harmful to your health.	☺	☺	😐	☹	☹
7.	I would rather take a vitamin pill than worry about what I eat.	☺	☺	😐	☹	☹
8.	It is easy to do my school work when I am hungry.	☺	☺	😐	☹	☹
9.	Children need to eat a variety of vegetables.	☺	☺	😐	☹	☹
10.	I am too young to worry about foods that cause heart disease.	☺	☺	😐	☹	☹

		Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
11.	I like it when someone else tells me what to eat.	☺	☺	😐	☹	☹
12.	I make better grades when I am hungry.	☺	☺	😐	☹	☹
13.	I like to try new foods.	☺	☺	😐	☹	☹
14.	Exercise is needed to maintain a healthy weight.	☺	☺	😐	☹	☹
15.	I do not think about how much water I drink.	☺	☺	😐	☹	☹
16.	Eating food helps me to think better.	☺	☺	😐	☹	☹

FOOD CHOICE ASSESSMENT

Directions: For each item draw a circle around the number of the food or beverage that you would most likely choose.

1. Which one of the following would you choose for a mid-morning snack?
    1. blueberry muffin
    2. candy bar
    3. frosted cupcake
    4. orange wedges

2. Which one of the following foods would you choose for breakfast?
    1. buttered biscuit
    2. dry toast with jam
    3. jelly doughnut
    4. waffle with syrup

3. Which one of the following would you choose to drink with your breakfast?
    1. Kool-aid
    2. milk shake
    3. orange juice
    4. soft drink

4. Which one of the following would you choose for an afternoon snack?
    1. potato chips
    2. pretzels
    3. tortilla chips
    4. unsalted popcorn

5. Which one of the following sandwiches would you choose for lunch?
    1. broiled chicken burger
    2. cheeseburger
    3. hamburger
    4. hot dog

6. Which one of the following breads would you use to make a sandwich for lunch?
    1. french bread
    2. hamburger bun
    3. white bread
    4. whole wheat bread

7. Which one of the following would you choose for a frozen snack?
    1. banana split
    2. chocolate sundae
    3. ice cream cone
    4. juice bar

8. Which one of the following would you choose to eat with a breakfast of orange juice, poached egg, and milk?
    1. cheese slice
    2. grapefruit half
    3. peach slices
    4. toast

9. Which one of the following snacks would you choose from a vending machine?
    1. cheese puffs
    2. popcorn
    3. potato chips
    4. pretzels

10. Which one of the following meats would you choose for your evening meal?
    1. bacon sandwich
    2. ham slice
    3. link sausage
    4. pork chop

11. Which one of the following desserts would you take in your sack lunch?
   1. candy bar
   2. chocolate chip cookies
   3. frosted cupcakes
   4. graham crackers

12. Which one of the following would you choose to eat with a serving of chicken?
   1. corn on the cob
   2. french fries
   3. macaroni
   4. spaghetti

13. Which one of the following would you choose to drink with a snack of cheese, crackers, and slice of turkey?
   1. apple juice
   2. iced tea
   3. milk shake
   4. soft drink

14. Which one of the following types of crackers would you choose for a snack?
   1. cheese crackers
   2. ritz crackers
   3. saltine crackers
   4. whole wheat crackers

15. Which one of the following meats would you choose for a sandwich?
   1. bologna
   2. ham
   3. salami
   4. turkey

16. If you were having friends over, which one of the following drinks would you serve?
   1. Kool-aid
   2. fruit punch
   3. orange juice
   4. soft drink

17. Which of the following would you drink with a cookie?
   1. chocolate milk
   2. coke float
   3. skim milk
   4. whole milk

18. Which one of the following would you choose to eat with baked chicken, rice, and milk?
   1. biscuit
   2. corn bread
   3. gravy
   4. green beans

19. If you had friends over, which one of the following snacks would you serve?
   1. apple slices
   2. cheese and crackers
   3. dill pickles
   4. potato chips

20. Which one of the following would you choose to drink with a snack of orange slices and raisin cookies?
   1. apple juice
   2. Kool-aid
   3. milk
   4. soda

REPORTED FOOD INTAKE

Directions: Please put an "X" on the face which shows what you really do.

		Always	Sometimes	Never
1.	I eat at least 2 servings of fruit each day.	☺	😐	☹
2.	I eat at least one meal each day with my family.	☺	😐	☹
3.	I eat sweets every day.	☺	😐	☹
4.	I salt foods before tasting.	☺	😐	☹
5.	I eat at least 3 servings of vegetables each day.	☺	😐	☹
6.	I drink skim or low-fat milk.	☺	😐	☹
7.	I eat whole wheat bread or corn tortillas.	☺	😐	☹

		Always	Sometimes	Never
8.	I eat at least 6 servings of bread, tortillas, cereal, rice or pasta each day.	☺	😐	☹
9.	I drink at least 6 glasses of water each day.	☺	😐	☹
10.	I often prepare my own meals.	☺	😐	☹
11.	I drink regular soft drinks almost everyday.	☺	😐	☹
12.	I eat salted chips, pretzels, or popcorn every day.	☺	😐	☹
13.	I put butter or margarine on my bread or rolls.	☺	😐	☹
14.	I eat at least 2 servings of milk, yogurt or cheese each day.	☺	😐	☹
15.	I decide what foods to buy when I spend my money.	☺	😐	☹
16.	I eat raw vegetables every day.	☺	😐	☹
17.	I eat American cheeses or cheese spreads daily.	☺	😐	☹
18.	I eat at least 2 servings of meat, fish, poultry or beans each day.	☺	😐	☹
19.	I eat bologna, pepperoni or salami every day.	☺	😐	☹

		Always	Sometimes	Never
20.	I drink Kool-aid or sweetened fruit drinks every day.	☺	😐	☹
21.	I take a vitamin pill each day.	☺	😐	☹
22.	I eat corn, beans, or peas every day.	☺	😐	☹

Directions: Please answer the following questions by writing your answer in the space provided.

1. What helps you decide what to eat?

2. My major concern about what I eat is:

This is the end of the Questionnaire

THANK YOU FOR PARTICIPATING!

Key for Questionnaire - Grade 5

GOAL/Criteria	Question Number(Answer Number)
NUTRITION KNOWLEDGE	
●healthy food choices	1(3), 5(3), 9(3), 13(1)
●nutrition and health/fitness	2(4), 6(2), 10(3), 14(2)
●self-responsibility for food selection	3(3), 7(4), 11(1), 15(3)
●nutrition and scholastic achievement	4(3), 8(4), 12(1), 16(1)
NUTRITION ATTITUDE	
●healthy food choices	+1, +5, +9, +13
●nutrition and health/fitness	+2, +6, -10, +14
●self-responsibility for food selection	+3, -7, -11, -15
●nutrition and scholastic achievement	+4, -8, -12, +16
NUTRITION BEHAVIORS	
Food Choices	
●sugar	1(4), 3(3), 11(4), 16(3)
●sodium	4(4), 10(4), 15(4), 19(1)
●fat	2(2), 5(1), 7(4), 17(3)
●fiber	6(4), 9(2), 12(1), 14(4)
●variety	8(4), 13(1), 18(4), 20(3)
Reported Food Intake	
●sugar	3, 11, 20
●sodium	4, 12, 17
●fat	6, 13, 19
●fiber	7, 16, 22
●variety	1, 5, 8, 14, 18, 21
●beverage	9
●family meal environment	2, 10, 15

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Demographic Results - Grade 5[a]

CHARACTERISTICS	Frequency	%
Gender:		
• Female	50	43.5
• Male	65	56.5
Ethnicity:		
• African-American	5	4.3
• American Indian or Alaskan Native	2	1.7
• Asian or Pacific Islander	1	0.9
• Hispanic	20	17.4
• White	86	74.8
• No Response	1	0.9
People who taught you about food which is good for you:[b]		
• School cafeteria employee	7	6.1
• School nurse	18	15.7
• Teacher	106	92.2
Learned about food which is good for you from:[b]		
• Books	71	61.7
• Clubs	14	12.2
• Family members	62	53.9
• Magazine or newspapers	20	17.4
• Television or radio	35	30.4
Number of times per week you eat breakfast:		
• None	3	2.6
• One	5	4.3
• Two	7	6.1
• Three	5	4.3
• Four	4	3.5
• Five	10	8.7
• Six	15	13.0
• Seven	66	57.4
Reason for not eating breakfast:		
• Am not hungry	31	26.9

CHARACTERISTICS	Frequency	%
• Do not feel good	21	18.3
• Do not like food served	3	2.6
• No food is available	2	1.7
• No one prepares the food	1	0.9
• No time to eat the food	41	35.7
• On a diet to lose weight	2	1.7
• No Response	14	12.2
Where breakfast is usually eaten on a school day:		
• At home	86	74.8
• At school cafeteria	22	19.1
• No Response	7	6.1
Number of times student eats breakfast served in the school cafeteria:		
• None	91	79.1
• One	4	3.5
• Two	3	2.6
• Three	2	1.7
• Four	3	2.6
• Five	12	10.4
Number of times per week you eat lunch:		
• None	0	0.0
• One	1	0.9
• Two	1	0.9
• Three	0	0.0
• Four	0	0.0
• Five	19	16.5
• Six	15	13.0
• Seven	79	68.7
Where lunch is usually eaten on a school day:		
• At home	1	0.9
• At school cafeteria	98	85.2
• Brought lunch to school	15	13.0
• No Response	1	0.9
Number of times student eats lunch served in the school cafeteria:		

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CHARACTERISTICS	Frequency	%
• None	16	13.9
• One	6	5.2
• Two	11	9.6
• Three	8	6.9
• Four	10	8.7
• Five	64	55.7
Reason for not eating the school lunch:		
• Costs too much	3	2.6
• Do not like food served	47	40.9
• Friends do not eat school lunch	3	2.6
• Lunch room is not pleasant and relaxing	0	0.0
• More fun to eat away from school	0	0.0
• On a diet to lose weight	1	0.9
• Wait in lunch line too long	3	2.6
• Want to bring my own lunch	44	38.3
• No Response	14	12.2

[a]n = 115
[b]n = multiple responses allowed

APPENDIX F

INSTRUMENT
DEVELOPED FOR
GRADE 8

- Questionnaire
- Key
- Demographics

Student Name:____
Last First

School Name:____

Birth date:_____-____-_____ Age:_____
month day year

AN ASSESSMENT OF NUTRITION EDUCATION & TRAINING NEEDS IN TEXAS

Grade 8

Project Sponsored by
Texas NET Program
P.O. Box 149030
Austin, TX 78714-9030

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MS 41162
Lubbock, TX 79409
FAX (806) 742-3042

TEXAS

NET

NUTRITION EDUCATION & TRAINING

Dear Eighth Grader:

YOU have been selected to take part in a very important research project. This project is sponsored by the Texas Department of Human Services.

Your cooperation and input are needed to respond to this questionnaire on nutrition education. The responses of participants across the state of Texas will help guide the direction for more effective nutrition education in the schools.

Please follow these guidelines in responding to the questions:

-read the directions to each section and every question carefully and respond; some of the sections have different directions and response patterns.

-after you have finished the questionnaire, check each page to be sure that you have answered all the questions.

-your answers to the questionnaire will be confidential; the results will be used for research purposes only.

THANK YOU for being a part of this special study!

DEMOGRAPHICS

DIRECTIONS: Please respond to the following questions by drawing a circle around the best answer on every page. Answer the questions to the best of your ability.

1. You are a:
    1. female
    2. male

2. Your ethnic background:
    1. African-American
    2. American Indian or Alaskan Native
    3. Asian or Pacific Islander
    4. Hispanic/Spanish
    5. White

3. During the last year, who has taught you about healthy food?
(CIRCLE YES OR NO FOR EACH RESPONSE)

• family members	1. Yes 2. No
• friends	1. Yes 2. No
• school cafeteria employee	1. Yes 2. No
• school nurse	1. Yes 2. No
• teacher	1. Yes 2. No

other, please specify ______________________________

4. During the last year, where have you learned about healthy food?
(CIRCLE YES OR NO FOR EACH RESPONSE)

• books	1. Yes 2. No
• clubs (4-H, Scouts)	1. Yes 2. No
• magazines, newspapers	1. Yes 2. No
• t.v., radio	1. Yes 2. No

other, please specify ______________________________

5. How many times per week do you eat breakfast served in the school cafeteria?
(CIRCLE ONLY ONE OF THE FOLLOWING NUMBERS)

0
1
2
3
4
5

6. If you do not eat the school breakfast, what is the main reason?
(CIRCLE ONLY ONE ANSWER)
01. am not hungry
02. do not feel good
03. do not like food served
04. no food is ready
05. no time to eat the food
06. on a diet to lose weight

other, please specify ________________________________

7. On a school day, where do you usually eat breakfast?
(CIRCLE ONLY ONE ANSWER)
1. at home
2. at school cafeteria
3. brought breakfast to school
4. restaurant/fast food operation

other, please specify ________________________________

8. How many times per week do you eat lunch served in the school cafeteria?
(CIRCLE ONLY ONE OF THE FOLLOWING NUMBERS)
0
1
2
3
4
5

9. If you do not eat the school lunch, what is the main reason?
(CIRCLE ONLY ONE ANSWER)
1. costs too much
2. do not like food served
3. friends do not eat school lunch
4. lunch room is not pleasant and relaxing
5. more fun to eat away from school
6. on a diet to lose weight
7. wait in lunch line too long
8. want to bring my own lunch

10. On a school day, where do you usually eat lunch?
(CIRCLE ONLY ONE ANSWER)
1. at home
2. at school cafeteria
3. brought lunch to school
4. restaurant/fast food operation

other, please specify ________________________________

11. If you have snacks during the school day, do you usually get them from:
(CIRCLE ONLY ONE ANSWER)
01. a snack bar at school
02. a nearby store
03. a vending machine at school
04. club members
05. do not eat snacks at school
06. home
07. teacher

other, please specify ________________________________

12. Would you like to know about:
(CIRCLE YES OR NO FOR EACH RESPONSE)

• healthy food choices	1. Yes	2. No
• food and fitness	1. Yes	2. No
• how I can make better food selections	1. Yes	2. No
• how food affects my school work	1. Yes	2. No
• nutrition	1. Yes	2. No

other, please specify ______________________________________

13. Do you think that the school cafeteria should be a cheerful and relaxing room for students to eat their school meals?
1. Yes 2. No

NUTRITION KNOWLEDGE ASSESSMENT

Directions: For each item draw a circle around the number of the best (most correct) answer to the question.

1. Which one of the following does NOT contain CAFFEINE?
   1. chocolate milk
   2. cola drinks
   3. grape juice
   4. iced tea

2. The BEST reason for eating snacks is that they:
   1. are popular with friends
   2. do not cost much
   3. do not need preparation
   4. provide nutrients

3. For the food with the least SODIUM I would select:
   1. a corn dog
   2. a medium carrot
   3. one ounce of processed cheese
   4. slice of cheese pizza

4. I am responsible for getting all the nutrients daily by:
   1. eating cereal and milk
   2. eating many kinds of foods
   3. eating snacks often
   4. taking a vitamin pill

5. For an UNSATURATED FAT, I would choose:
   1. butter
   2. canola oil
   3. coconut oil
   4. sour cream

6. A nutrient-dense food is one that provides:
   1. few nutrients compared to calories
   2. many calories but few nutrients
   3. many calories but no nutrients
   4. many nutrients compared to calories

7. For a LOW-CALORIE nutritious snack, I would select a:
   1. banana
   2. cup of cocoa
   3. diet cola
   4. frozen yogurt

8. Children who have a lack of IRON will show:
   1. high mental development and high physical activity
   2. high mental development and low physical activity
   3. low mental development and high physical activity
   4. low mental development and low physical activity

9. For a breakfast with the BEST source of FIBER, I would choose:
   1. bacon, egg and whole wheat bread
   2. cranberry juice, cinnamon roll
   3. orange juice, shredded wheat, cornmeal muffin
   4. orange juice, whole wheat toast, milk

10. Which is a TRUE statement?
   1. a high protein diet is necessary to build muscles
   2. grapefruit breaks down body fat
   3. milk is needed at all ages for calcium
   4. vitamin C cures a cold

11. If we are not careful about what we eat we may have problems with:
   1. food expenses
   2. health information
   3. serious diseases
   4. the food chain

12. Children who skip breakfast show:
    1. high attention due to low blood sugar levels
    2. high diligence due to low blood sugar levels
    3. low concentration due to low blood sugar levels
    4. low performance due to high blood sugar levels

13. A CALCIUM-RICH snack is:
    1. apples
    2. beef
    3. cheese
    4. grapes

14. People who need to decrease their caloric intake are the:
    1. anorexic
    2. athletes
    3. obese
    4. pregnant

15. My body needs nutritious food to:
    1. avoid an accident
    2. avoid being overweight
    3. have energy for school
    4. help the grocery sell food

16. The most accurate description of food intake and mental work is that:
    1. food increases glucose levels essential for sustained mental work
    2. food decreases glucose levels essential for sustained mental work
    3. food consumption and digestion leaves less time for mental work
    4. there is no relationship between food intake and mental work

NUTRITION ATTITUDE ASSESSMENT

Directions: Please CIRCLE the number that best describes how you feel about each of the following statements.

	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
1. Breakfast is the most important meal of the day.	5	4	3	2	1
2. What I eat can help prevent certain diseases that I might get.	5	4	3	2	1

		Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
3.	It is a bad idea to try alcoholic drinks at my age.	5	4	3	2	1
4.	It is easy to do school work when I am hungry.	5	4	3	2	1
5.	It is important to eat a variety of vegetables, fruits and grains each day.	5	4	3	2	1
6.	Exercise is important to maintain a healthy weight.	5	4	3	2	1
7.	I would rather take a vitamin pill than worry about what I eat.	5	4	3	2	1
8.	Nutritious food contributes to my ability to learn.	5	4	3	2	1
9.	It is hard to make wise food choices when eating away from home.	5	4	3	2	1
10.	I am too young to worry about foods that cause heart disease.	5	4	3	2	1
11.	I would eat junk food to impress my friends.	5	4	3	2	1
12.	Eating breakfast can help me do well in school.	5	4	3	2	1
13.	Snacks are an important part of what we eat.	5	4	3	2	1
14.	What I eat affects the way I look.	5	4	3	2	1
15.	It is important to learn about nutrition at school.	5	4	3	2	1
16.	I make better grades when I am hungry.	5	4	3	2	1

FOOD CHOICE ASSESSMENT

Directions: For each item draw a circle around the number of the food or beverage that you would most likely select.

1. Which one of the following would you select for a mid-morning snack?
   1. blueberry muffin
   2. candy bar
   3. frosted cupcake
   4. orange wedges

2. Which one of the following would you select for your evening meal?
   1. bacon sandwich
   2. ham slice
   3. link sausage
   4. pork chop

3. Which one of the following would you select for a frozen refreshment?
   1. banana split
   2. chocolate sundae
   3. ice cream cone
   4. juice bar

4. Which one of the following breads would you use to make a sandwich for lunch?
   1. french bread
   2. hamburger bun
   3. white bread
   4. whole wheat bread

5. Which one of the following would you select to eat with a breakfast of orange juice, poached egg, and milk?
   1. cheese slice
   2. grapefruit half
   3. peach slices
   4. toast

6. If you consume beer, how many beers would you drink per day?
   1. none
   2. 1-2 beers
   3. 3-4 beers
   4. 5 beers or more

7. Which one of the following would you select to drink with your breakfast?
   1. Kool-aid
   2. milk shake
   3. orange juice
   4. soft drink

8. Which one of the following would you select for a snack after school?
   1. potato chips
   2. pretzels
   3. tortilla chips
   4. unsalted popcorn

9. Which one of the following foods would you select for breakfast?
   1. buttered biscuit
   2. dry toast with jam
   3. jelly doughnut
   4. waffle with syrup

10. Which one of the following snacks would you select from a vending machine?
    1. cheese puffs
    2. popcorn
    3. potato chips
    4. pretzels

11. Which one of the following would you select to drink with an afternoon snack of cheese, crackers, and slice of turkey?
    1. apple juice
    2. iced tea
    3. milk shake
    4. soft drink

12. At a social event, how many mixed alcoholic drinks would you consume?
    1. none
    2. 1-2 drinks
    3. 3-4 drinks
    4. 5 drinks or more

13. If you were having friends over, which one of the following drinks would you serve?
    1. Kool-aid
    2. fruit punch
    3. orange juice
    4. soft drink

14. Which one of the following meats would you select for a sandwich?
    1. bologna
    2. ham
    3. salami
    4. turkey

15. Which one of the following would you drink with a cookie?
    1. chocolate milk
    2. coke float
    3. skim milk
    4. whole milk

16. Which one of the following types of crackers would you select for a snack?
   1. cheese crackers
   2. ritz crackers
   3. saltine crackers
   4. whole wheat crackers

17. Which one of the following would you select to drink with a mid-morning snack of orange slices and raisin cookies?
   1. apple juice
   2. Kool-aid
   3. milk
   4. soda

18. How many glasses of champagne would you drink at a party?
   1. none
   2. 1-2 glasses
   3. 3-4 glasses
   4. 5 glasses or more

19. Which one of the following desserts would you take in your sack lunch?
   1. candy bar
   2. chocolate chip cookies
   3. frosted cupcakes
   4. graham crackers

20. If you had friends over, which one of the following snacks would you select to serve?
   1. apple slices
   2. cheese and crackers
   3. dill pickles
   4. potato chips

21. Which one of the following sandwiches would you select for lunch?
   1. broiled chicken burger
   2. cheeseburger
   3. hamburger
   4. hot dog

22. Which one of the following would you select to eat with a serving of chicken?
   1. corn on the cob
   2. french fries
   3. macaroni
   4. spaghetti

23. Which one of the following would you select to eat with baked chicken, rice, and milk?
   1. biscuit
   2. corn bread
   3. gravy
   4. green beans

24. How many glasses of wine would you drink at a social event?
    1. none
    2. 1-2 glasses
    3. 3-4 glasses
    4. 5 glasses or more

REPORTED FOOD INTAKE

DIRECTIONS: Please mark an X inside the [ ] (bracket) which represents how often you eat or drink the food or beverage.

		Never	1-2 times per week	3-4 times per week	5-6 times per week	Daily
1.	At least five (5) different kinds of foods daily such as fruit, vegetables, bread or cereals or beans, meat, milk or cheese?	[ ]	[ ]	[ ]	[ ]	[ ]
2.	Jam or jelly?	[ ]	[ ]	[ ]	[ ]	[ ]
3.	Dried fruits?	[ ]	[ ]	[ ]	[ ]	[ ]
4.	Regular Kool-aid, Hi-C, gatorade or fruit drinks?	[ ]	[ ]	[ ]	[ ]	[ ]
5.	Whole fruit with skins or seeds, such as berries, apples, pears, and peaches?	[ ]	[ ]	[ ]	[ ]	[ ]
6.	Salted nuts, salted popcorn, pretzels, corn chips or potato chips?	[ ]	[ ]	[ ]	[ ]	[ ]
7.	Scrambled or fried eggs and egg salad?	[ ]	[ ]	[ ]	[ ]	[ ]
8.	Onion or garlic salt?	[ ]	[ ]	[ ]	[ ]	[ ]
9.	Processed American cheeses and cheese spreads?	[ ]	[ ]	[ ]	[ ]	[ ]
10.	Poptarts, cakes, cupcakes, frosted doughnuts, cookies, pies, or pastries sweetened with sugar?	[ ]	[ ]	[ ]	[ ]	[ ]
11.	The skin of poultry or the visible fat from meat?	[ ]	[ ]	[ ]	[ ]	[ ]

		Never	1-2 times per week	3-4 times per week	5-6 times per week	Daily
12.	Butter or margarine on dinner rolls, breads or vegetables?	☐	☐	☐	☐	☐
13.	Oily salad dressings such as ranch, thousand island, french, and italian?	☐	☐	☐	☐	☐
14.	Soft drinks?	☐	☐	☐	☐	☐
15.	Candy?	☐	☐	☐	☐	☐
16.	Whole grain breads or baked goods?	☐	☐	☐	☐	☐
17.	Canned or frozen fruit packed in heavy syrup?	☐	☐	☐	☐	☐
18.	Dark green or deep yellow vegetables such as cabbage, spinach, carrots, broccoli, tomatoes, tomato juice, and brussel sprouts? (1/2 cup = 1 serving)	☐	☐	☐	☐	☐
19.	Food that you have salted before tasting?	☐	☐	☐	☐	☐
20.	Sauces, gravies or sour cream?	☐	☐	☐	☐	☐
21.	1 or more servings of alcoholic beverage? (1 serving = 5 oz wine, 12 oz beer, 1.5 oz liquor, 80 proof)	☐	☐	☐	☐	☐
22.	2 or more servings daily of fruits or 100% fruit juices? (1/2 cup = 1 serving)	☐	☐	☐	☐	☐
23.	2 or more servings daily of milk (8 oz), yogurt (8 oz) or cheese (1 oz)?	☐	☐	☐	☐	☐
24.	Bouillon, canned or dehydrated soup mixes?	☐	☐	☐	☐	☐
25.	Whole milk (4%), or high-fat cheeses such as cheddar, creamed cottage cheese, cream cheese and processed American?	☐	☐	☐	☐	☐
26.	Vegetables, rice or pasta with salt added to the cooking water?	☐	☐	☐	☐	☐

		Never	1-2 times per week	3-4 times per week	5-6 times per week	Daily
27.	Fried meats such as fried chicken, chicken fried steak, steak fingers, breaded fish and deep-fat fried nuggets?	☐	☐	☐	☐	☐
28.	Nuts?	☐	☐	☐	☐	☐
29.	Ice cream, sherbets or popsicles?	☐	☐	☐	☐	☐
30.	Raw vegetables?	☐	☐	☐	☐	☐
31.	Dishes made with dry beans and peas?	☐	☐	☐	☐	☐
32.	Coffee or tea sweetened with sugar or honey?	☐	☐	☐	☐	☐
33.	6 or more glasses of water daily? (1 glass = 8 oz)	☐	☐	☐	☐	☐
34.	Fried and/or pan fried breaded vegetables, such as french fries, okra, zucchini, hush puppies and snack chips?	☐	☐	☐	☐	☐
35.	2 or more servings daily of meat, poultry, fish (2 1/2 - 3 oz), dry beans (1/2 cup), eggs (1) or peanut butter (2 T.)?	☐	☐	☐	☐	☐
36.	Regular cured or processed meats such as ham, bacon, sausage, frankfurters and pepperoni that are not reduced in salt?	☐	☐	☐	☐	☐
37.	Potatoes, corn and peas?	☐	☐	☐	☐	☐
38.	Popcorn?	☐	☐	☐	☐	☐
39.	Regular TV dinners, frozen entrees not reduced in salt?	☐	☐	☐	☐	☐
40.	Vegetables canned with salt or frozen vegetables with sauce?	☐	☐	☐	☐	☐

		Never	1-2 times per week	3-4 times per week	5-6 times per week	Daily
41.	Citrus fruits, citrus juices, berries, peaches, melons, green and leafy vegetables, tomatoes, tomato juice, cauliflower, green peppers, and sweet potatoes? (1/2 cup = 1 serving)	[ ]	[ ]	[ ]	[ ]	[ ]
42.	Honey, molasses and syrup?	[ ]	[ ]	[ ]	[ ]	[ ]
43.	Soy sauce, teriyaki sauce and meat tenderizer?	[ ]	[ ]	[ ]	[ ]	[ ]
44.	Cooked fresh or frozen vegetables?	[ ]	[ ]	[ ]	[ ]	[ ]
45.	Whole grain cereals and pastas such as oatmeal, brown rice, whole cornmeal, and whole wheat pasta?	[ ]	[ ]	[ ]	[ ]	[ ]
46.	3 or more servings daily of vegetables or vegetable juices? (1/2 cup = 1 serving)	[ ]	[ ]	[ ]	[ ]	[ ]
47.	Pies, frosted cakes, doughnuts, pastries and regular ice cream that are not reduced in fat?	[ ]	[ ]	[ ]	[ ]	[ ]
48.	6 or more servings daily of bread, tortillas, cereal, rice, or pasta such as macaroni, noodles, and spaghetti? (1/2 cup or 1 slice = 1 serving)	[ ]	[ ]	[ ]	[ ]	[ ]
49.	Bacon, sausage, frankfurters, jerky and luncheon meats such as bologna, salami, and pepperoni?	[ ]	[ ]	[ ]	[ ]	[ ]

Directions: Please answer the following questions by writing your answer in the space provided.

1. What helps you decide what to eat?

____

____

____

____

____

2. My major concern about what I eat is:

____

____

____

____

____

This is the end of the Questionnaire

THANK YOU FOR PARTICIPATING!

Key for Questionnaire - Grade 8

GOAL/Criteria	Question Number(Answer Number)
NUTRITION KNOWLEDGE	
●healthy food choices	1(3), 5(2), 9(3), 13(3)
●nutrition and health/fitness	2(4), 6(4), 10(3), 14(3)
●self-responsibility for food selection	3(2), 7(1), 11(3), 15(3)
●nutrition and scholastic achievement	4(2), 8(4), 12(3), 16(1)
NUTRITION ATTITUDE	
●healthy food choices	+1, +5, -9, +13
●nutrition and health/fitness	+2, +6, -10, +14
●self-responsibility for food selection	+3, -7, -11, +15
●nutrition and scholastic achievement	-4, +8, +12, -16
NUTRITION BEHAVIORS	
Food Choices	
●sugar	1(4), 7(3), 13(4), 19(4)
●sodium	2(4), 8(4), 14(4), 20(1)
●fat	3(4), 9(2), 15(3), 21(1)
●fiber	4(4), 10(2), 16(4), 22(1)
●variety	5(4), 11(1), 17(3), 23(4)
●alcohol	6(1 or 2), 12(1 or 2), 18(1 or 2), 24(1 or 2)
Reported Food Intake	
●sugar	2, 4, 10, 14, 15, 17, 29, 32, 42
●sodium	6, 8, 9, 19, 24, 26, 36, 39, 40, 43
●fat	7, 11, 12, 13, 20, 25, 27, 34, 47, 49
●fiber	3, 5, 16, 28, 30, 31, 37, 38, 44, 45
●variety	1, 22, 23, 35, 46, 48
●beverage	21, 33
●cancer preventing foods	18, 41

Demographic Results - Grade 8[a]

CHARACTERISTICS	Frequency	%
Gender:		
• Female	84	55.6
• Male	37	24.5
• No Response	30	19.9
Ethnicity:		
• African-American	25	16.6
• American Indian or Alaskan Native	0	0.0
• Asian or Pacific Islander	1	0.7
• Hispanic	53	35.1
• White	42	27.8
• No Response	30	19.9
People who taught you about food which is good for you:[b]		
• School cafeteria employee	12	7.9
• School nurse	20	13.2
• Teacher	90	59.6
Learned about food which is good for you from:[b]		
• Books	64	42.4
• Clubs	5	3.3
• Family members	62	41.1
• Magazine or newspapers	52	34.4
• Television or radio	50	33.1
Number of times per week you eat breakfast:		
• None	19	12.6
• One	13	8.6
• Two	23	15.2
• Three	13	8.6
• Four	9	6.0
• Five	12	7.9
• Six	5	3.3
• Seven	27	47.9
• No Response	30	19.9
Reason for not eating breakfast:		
• Am not hungry	53	35.1
• Do not feel good	9	6.0
• Do not like food served	0	0.0
• No food is available	5	3.3

CHARACTERISTICS	Frequency	%
• No one prepares the food	3	2.0
• No time to eat the food	36	23.8
• On a diet to lose weight	5	3.3
Where breakfast is usually eaten on a school day:		
• At home	72	47.4
• Restaurant/fast food operation	6	4.0
• No Response	41	27.2
Number of times student eats breakfast served in the school cafeteria:		
• None	91	60.3
• One	9	6.0
• Two	7	4.6
• Three	4	2.6
• Four	3	2.0
• Five	6	4.0
• No Response	31	20.6
Number of times per week you eat lunch:		
• None	2	1.3
• One	1	0.7
• Two	2	1.3
• Three	4	2.6
• Four	7	4.6
• Five	22	14.6
• Six	11	7.3
• Seven	71	47.0
• No Response	31	20.6
Where lunch is usually eaten on a school day:		
• At home	5	3.3
• At school cafeteria	103	68.2
• Restaurant/fast food operation	2	1.3
• No Response	37	24.5

CHARACTERISTICS	Frequency	%
Number of times student eats lunch served in the school cafeteria:		
• None	9	6.0
• One	3	2.0
• Two	4	2.6
• Three	4	2.6
• Four	7	4.6
• Five	92	60.9
• No Response	32	21.2
Reason for not eating the school lunch:		
• Costs too much	8	5.3
• Do not like food served	40	26.5
• Friends do not eat school lunch	3	2.0
• Lunch room is not pleasant and relaxing	2	1.3
• More fun to eat away from school	7	4.6
• On a diet to lose weight	8	5.3
• Wait in lunch line too long	17	11.3
• Want to bring my own lunch	8	5.3
• No Response	58	8.4

[a]n = 151
[b]n = multiple responses allowed

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APPENDIX G

INSTRUMENT
DEVELOPED FOR
GRADE 11

- Questionnaire
- Key
- Demographics

Student Name:______________________________
Last First

School Name:______________________________

Birth date:_____-____-_____ Age:_____
month day year

AN ASSESSMENT OF NUTRITION EDUCATION & TRAINING NEEDS IN TEXAS

Grade 11

Project Sponsored by
Texas NET Program
P.O. Box 149030
Austin, TX 78714-9030

Texas Tech University
MS 41162
Lubbock, TX 79409
FAX (806) 742-3042

TEXAS

NET

NUTRITION EDUCATION & TRAINING

Dear Eleventh Grader:

YOU have been selected to take part in a very important research project. This project is sponsored by the Texas Department of Human Services.

Your cooperation and input are needed to respond to this questionnaire on nutrition education. The responses of participants across the state of Texas will help guide the direction for more effective nutrition education in the schools.

Please follow these guidelines in responding to the questions:

- read the directions to each section and every question carefully and respond; some of the sections have different directions and response patterns.
- after you have finished the questionnaire, check each page to be sure that you have answered all the questions.
- your answers to the questionnaire will be confidential; the results will be used for research purposes only.

THANK YOU for being a part of this special study!

DEMOGRAPHICS

DIRECTIONS: Please respond to the following questions by drawing a circle around the best answer on every page. Answer the questions to the best of your ability.

1. You are a:
   1. female
   2. male

2. Your ethnic background:
   1. African-American
   2. American Indian or Alaskan Native
   3. Asian or Pacific Islander
   4. Hispanic/Spanish
   5. White

3. During the last year, who has taught you about healthy food?
   (CIRCLE YES OR NO FOR EACH RESPONSE)
   - family members 1. Yes 2. No
   - friends 1. Yes 2. No
   - school cafeteria employee 1. Yes 2. No
   - school nurse 1. Yes 2. No
   - teacher 1. Yes 2. No

   other, please specify ______________________________

4. During the last year, where have you learned about healthy food?
   (CIRCLE YES OR NO FOR EACH RESPONSE)
   - books 1. Yes 2. No
   - clubs (4-H, Scouts) 1. Yes 2. No
   - magazines, newspapers 1. Yes 2. No
   - t.v., radio 1. Yes 2. No

   other, please specify ______________________________

5. How many times per week do you eat breakfast served in the school cafeteria?
   (CIRCLE ONLY ONE OF THE FOLLOWING NUMBERS)
   0
   1
   2
   3
   4
   5

6. If you do not eat the school breakfast, what is the main reason?
(CIRCLE ONLY ONE ANSWER)
01. am not hungry
02. do not feel good
03. do not like food served
04. no food is ready
05. no time to eat the food
06. on a diet to lose weight

other, please specify ______________________

7. On a school day, where do you usually eat breakfast?
(CIRCLE ONLY ONE ANSWER)
1. at home
2. at school cafeteria
3. brought breakfast to school
4. restaurant/fast food operation

other, please specify ______________________

8. How many times per week do you eat lunch served in the school cafeteria?
(CIRCLE ONLY ONE OF THE FOLLOWING NUMBERS)
0
1
2
3
4
5

9. If you do not eat the school lunch, what is the main reason?
(CIRCLE ONLY ONE ANSWER)
1. costs too much
2. do not like food served
3. friends do not eat school lunch
4. lunch room is not pleasant and relaxing
5. more fun to eat away from school
6. on a diet to lose weight
7. wait in lunch line too long
8. want to bring my own lunch

10. On a school day, where do you usually eat lunch?
(CIRCLE ONLY ONE ANSWER)
1. at home
2. at school cafeteria
3. brought lunch to school
4. restaurant/fast food operation

other, please specify ______________________

11. If you have snacks during the school day, do you usually get them from:
(CIRCLE ONLY ONE ANSWER)
01. a snack bar at school
02. a nearby store
03. a vending machine at school
04. club members
05. do not eat snacks at school
06. home
07. teacher

other, please specify ______________________________

12. Would you like to know about:
(CIRCLE YES OR NO FOR EACH RESPONSE)
- healthy food choices 1. Yes 2. No
- food and fitness 1. Yes 2. No
- how I can make better food selections 1. Yes 2. No
- how food affects my school work 1. Yes 2. No
- nutrition 1. Yes 2. No

other, please specify ______________________________

13. Do you think that the school cafeteria should be a cheerful and relaxing room for students to eat their school meals?
1. Yes 2. No

NUTRITION KNOWLEDGE ASSESSMENT

Directions: For each item draw a circle around the number of the best (most correct) answer to the question.

1. Which one of the following food groups would improve a breakfast of **orange juice, whole wheat toast and low-fat milk**?
    1. bread, cereal, pasta group
    2. fruit group
    3. meat, poultry, bean group
    4. milk, yogurt, cheese group

2. DIETARY IRON is important to the female athlete in preventing:
    1. anorexia nervosa
    2. bulimia
    3. sports anemia
    4. tachycardia

3. Eating many foods high in SUGAR may result in:
    1. diabetes mellitus
    2. high blood pressure
    3. obesity
    4. osteoporosis

4. Eating a balanced diet is related to:
   1. a definite negative attitude toward school and work
   2. a more positive attitude toward school and work
   3. a positive attitude toward food but negative attitude toward work
   4. no change in the attitudes toward school or work

5. A good example of a nutrient-dense snack is:
   1. celery and peanut butter
   2. chocolate cake
   3. french fries
   4. ice cream

6. One of the most important factors in losing weight is:
   1. decreasing activities
   2. increasing exercise
   3. increasing protein foods
   4. skipping a meal

7. The person with the most training in food-related problems is a:
   1. home economist
   2. nutritionist
   3. physician
   4. registered dietitian

8. The most accurate description of the relationship between mental work and food intake is that:
   1. food consumption and digestion leaves less time for mental work
   2. food decreases glucose levels essential for sustained mental work
   3. food increases glucose levels essential for sustained mental work
   4. there is no relationship between food intake and mental work

9. The BEST food for adding IRON in the diet is a serving of:
   1. apple
   2. grapes
   3. popcorn
   4. raisins

10. The Dietary Guidelines for Americans are mainly for:
   1. adolescents
   2. children
   3. healthy people
   4. people on diets

11. The best way to avoid overeating is to:
   1. decline second servings
   2. eat only at night
   3. skip a meal daily
   4. use a protein supplement

12. Low mental development and low physical activity of children is largely due to:
    1. deficiency of vitamin E
    2. deficiency of iron
    3. lack of calcium
    4. low intake of vitamin C

13. The LEAST important factor in deciding your nutrient and caloric needs is:
    1. age
    2. amount of exercise
    3. gender
    4. personal beliefs

14. Keeping ideal body weight can reduce the risk of:
    1. diabetes
    2. hepatitis
    3. mononucleosis
    4. tuberculosis

15. For the food with the least SODIUM I would select:
    1. a corn dog
    2. a medium carrot
    3. one ounce of processed cheese
    4. slice of cheese pizza

16. Children who skip breakfast show:
    1. high attention due to low blood sugar levels
    2. high diligence due to low blood sugar levels
    3. low concentration due to low blood sugar levels
    4. low performance due to high blood sugar levels

NUTRITION ATTITUDE ASSESSMENT

Directions: Please CIRCLE the number that best describes how you feel about each of the following statements.

	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
1. Breakfast is the most important meal of the day.	5	4	3	2	1
2. The foods I eat now will affect my future health.	5	4	3	2	1
3. Nutrition information should be part of what I learn at school.	5	4	3	2	1

		Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
4.	Nutritious food influences my ability to learn.	5	4	3	2	1
5.	It is hard to make nutritious food choices when eating away from home.	5	4	3	2	1
6.	Exercise is an important factor in weight control.	5	4	3	2	1
7.	I would drink alcoholic beverages to impress my friends.	5	4	3	2	1
8.	Breakfast is an important meal for good performance in school.	5	4	3	2	1
9.	It is important to eat a variety of vegetables, fruits and grain products each day.	5	4	3	2	1
10.	Diet is important in maintaining a healthy weight.	5	4	3	2	1
11.	I would rather take a vitamin pill than worry about what I eat.	5	4	3	2	1
12.	It is difficult to do my school work when I am hungry.	5	4	3	2	1
13.	Snacks should be chosen to add nutrients to the daily diet.	5	4	3	2	1
14.	I am too young to think about cholesterol and fat in my diet.	5	4	3	2	1
15.	I would eat junk food to impress my friends.	5	4	3	2	1
16.	I make better grades when I am hungry.	5	4	3	2	1

FOOD CHOICE ASSESSMENT

Directions: For each item draw a circle around the number of the food or beverage that you would most likely select.

1. Which one of the following would you select for a mid-morning snack?
    1. blueberry muffin
    2. candy bar
    3. frosted cupcake
    4. orange wedges

2. Which one of the following would you select for your evening meal?
    1. bacon sandwich
    2. ham slice
    3. link sausage
    4. pork chop

3. Which one of the following would you select for a frozen refreshment?
    1. banana split
    2. chocolate sundae
    3. ice cream cone
    4. juice bar

4. Which one of the following breads would you use to make a sandwich for lunch?
    1. french bread
    2. hamburger bun
    3. white bread
    4. whole wheat bread

5. Which one of the following would you select to eat with a breakfast of orange juice, poached egg, and milk?
    1. cheese slice
    2. grapefruit half
    3. peach slices
    4. toast

6. If you consume beer, how many beers would you drink per day?
    1. none
    2. 1-2 beers
    3. 3-4 beers
    4. 5 beers or more

7. Which one of the following would you select to drink with your breakfast?
    1. Kool-aid
    2. milk shake
    3. orange juice
    4. soft drink

8. Which one of the following would you select for a snack after school?
   1. potato chips
   2. pretzels
   3. tortilla chips
   4. unsalted popcorn

9. Which one of the following foods would you select for breakfast?
   1. buttered biscuit
   2. dry toast with jam
   3. jelly doughnut
   4. waffle with syrup

10. Which one of the following snacks would you select from a vending machine?
    1. cheese puffs
    2. popcorn
    3. potato chips
    4. pretzels

11. Which one of the following would you select to drink with an afternoon snack of cheese, crackers, and slice of turkey?
    1. apple juice
    2. iced tea
    3. milk shake
    4. soft drink

12. At a social event, how many mixed alcoholic drinks would you consume?
    1. none
    2. 1-2 drinks
    3. 3-4 drinks
    4. 5 drinks or more

13. If you were having friends over, which one of the following drinks would you serve?
    1. Kool-aid
    2. fruit punch
    3. orange juice
    4. soft drink

14. Which one of the following meats would you select for a sandwich?
    1. bologna
    2. ham
    3. salami
    4. turkey

15. Which one of the following drinks would you select to go with a cookie?
    1. chocolate milk
    2. coke float
    3. skim milk
    4. whole milk

16. Which one of the following types of crackers would you select for a snack?
   1. cheese crackers
   2. ritz crackers
   3. saltine crackers
   4. whole wheat crackers

17. Which one of the following would you select to drink with a mid-morning snack of orange slices and raisin cookies?
   1. apple juice
   2. Kool-aid
   3. milk
   4. soda

18. How many glasses of champagne would you drink at a party?
   1. none
   2. 1-2 glasses
   3. 3-4 glasses
   4. 5 glasses or more

19. Which one of the following desserts would you take in your sack lunch?
   1. candy bar
   2. chocolate chip cookies
   3. frosted cupcakes
   4. graham crackers

20. If you had friends over, which one of the following snacks would you select to serve?
   1. apple slices
   2. cheese and crackers
   3. dill pickles
   4. potato chips

21. Which one of the following sandwiches would you select for lunch?
   1. broiled chicken burger
   2. cheeseburger
   3. hamburger
   4. hot dog

22. Which one of the following would you select to eat with a serving of roasted chicken?
   1. corn on the cob
   2. french fries
   3. macaroni
   4. spaghetti

23. Which one of the following would you select to eat with baked chicken, rice, and milk?
   1. biscuit
   2. corn bread
   3. gravy
   4. green beans

24. How many glasses of wine would you drink at a social event?
    1. none
    2. 1-2 glasses
    3. 3-4 glasses
    4. 5 glasses or more

REPORTED FOOD INTAKE

DIRECTIONS: Please mark an X inside the [ ] (bracket) which represents how often you eat or drink the food or beverage.

		Never	1-2 times per week	3-4 times per week	5-6 times per week	Daily
1.	At least five (5) different kinds of foods daily such as fruit, vegetables, bread or cereals or beans, meat, milk or cheese?	[ ]	[ ]	[ ]	[ ]	[ ]
2.	Jam or jelly?	[ ]	[ ]	[ ]	[ ]	[ ]
3.	Dried fruits?	[ ]	[ ]	[ ]	[ ]	[ ]
4.	Regular Kool-aid, Hi-C, gatorade or fruit drinks?	[ ]	[ ]	[ ]	[ ]	[ ]
5.	Whole fruit with skins or seeds, such as berries, apples, pears, and peaches?	[ ]	[ ]	[ ]	[ ]	[ ]
6.	Salted nuts, salted popcorn, pretzels, corn chips or potato chips?	[ ]	[ ]	[ ]	[ ]	[ ]
7.	Scrambled or fried eggs and egg salad?	[ ]	[ ]	[ ]	[ ]	[ ]
8.	Onion or garlic salt?	[ ]	[ ]	[ ]	[ ]	[ ]
9.	Processed American cheeses and cheese spreads?	[ ]	[ ]	[ ]	[ ]	[ ]
10.	Poptarts, cakes, cupcakes, frosted doughnuts, cookies, pies, or pastries sweetened with sugar?	[ ]	[ ]	[ ]	[ ]	[ ]
11.	The skin of poultry or the visible fat from meat?	[ ]	[ ]	[ ]	[ ]	[ ]

		Never	1-2 times per week	3-4 times per week	5-6 times per week	Daily
12.	Butter or margarine on dinner rolls, breads or vegetables?	[ ]	[ ]	[ ]	[ ]	[ ]
13.	Oily salad dressings such as ranch, thousand island, french, and italian?	[ ]	[ ]	[ ]	[ ]	[ ]
14.	Soft drinks?	[ ]	[ ]	[ ]	[ ]	[ ]
15.	Candy?	[ ]	[ ]	[ ]	[ ]	[ ]
16.	Whole grain breads or baked goods?	[ ]	[ ]	[ ]	[ ]	[ ]
17.	Canned or frozen fruit packed in heavy syrup?	[ ]	[ ]	[ ]	[ ]	[ ]
18.	Dark green or deep yellow vegetables such as cabbage, spinach, carrots, broccoli, tomatoes, tomato juice, and brussel sprouts? (1/2 cup = 1 serving)	[ ]	[ ]	[ ]	[ ]	[ ]
19.	Food that you have salted before tasting?	[ ]	[ ]	[ ]	[ ]	[ ]
20.	Sauces, gravies or sour cream?	[ ]	[ ]	[ ]	[ ]	[ ]
21.	1 or more servings of alcoholic beverage? (1 serving = 5 oz wine, 12 oz beer, 1.5 oz liquor, 80 proof)	[ ]	[ ]	[ ]	[ ]	[ ]
22.	2 or more servings daily of fruits or 100% fruit juices? (1/2 cup = 1 serving)	[ ]	[ ]	[ ]	[ ]	[ ]
23.	2 or more servings daily of milk (8 oz), yogurt (8 oz) or cheese (1 oz)?	[ ]	[ ]	[ ]	[ ]	[ ]
24.	Bouillon, canned or dehydrated soup mixes?	[ ]	[ ]	[ ]	[ ]	[ ]
25.	Whole milk (4%), or high-fat cheeses such as cheddar, creamed cottage cheese, cream cheese and processed American?	[ ]	[ ]	[ ]	[ ]	[ ]
26.	Vegetables, rice or pasta with salt added to the cooking water?	[ ]	[ ]	[ ]	[ ]	[ ]

	Never	1-2 times per week	3-4 times per week	5-6 times per week	Daily
27. Fried meats such as fried chicken, chicken fried steak, steak fingers, breaded fish and deep-fat fried nuggets?	☐	☐	☐	☐	☐
28. Nuts?	☐	☐	☐	☐	☐
29. Ice cream, sherbets or	☐	☐	☐	☐	☐
30. Raw vegetables?	☐	☐	☐	☐	☐
31. Dishes made with dry beans and peas?	☐	☐	☐	☐	☐
32. Coffee or tea sweetened with sugar or honey?	☐	☐	☐	☐	☐
33. 6 or more glasses of water daily? (1 glass = 8 oz)	☐	☐	☐	☐	☐
34. Fried and/or pan fried breaded vegetables, such as french fries, okra, zucchini, hush puppies and snack chips?	☐	☐	☐	☐	☐
35. 2 or more servings daily of meat, poultry, fish (2 1/2 - 3 oz), dry beans (1/2 cup), eggs (1) or peanut butter (2 T.)?	☐	☐	☐	☐	☐
36. Regular cured or processed meats such as ham, bacon, sausage, frankfurters and pepperoni that are not reduced in salt?	☐	☐	☐	☐	☐
37. Potatoes, corn and peas?	☐	☐	☐	☐	☐
38. Popcorn?	☐	☐	☐	☐	☐
39. Regular TV dinners, frozen entrees not reduced in salt?	☐	☐	☐	☐	☐
40. Vegetables canned with salt or frozen vegetables with sauce?	☐	☐	☐	☐	☐

		Never	1-2 times per week	3-4 times per week	5-6 times per week	Daily
41.	Citrus fruits, citrus juices, berries, peaches, melons, green and leafy vegetables, tomatoes, tomato juice, cauliflower, green peppers, and sweet potatoes? (1/2 cup = 1 serving)	☐	☐	☐	☐	☐
42.	Honey, molasses and syrup?	☐	☐	☐	☐	☐
43.	Soy sauce, teriyaki sauce and meat tenderizer?	☐	☐	☐	☐	☐
44.	Cooked fresh or frozen	☐	☐	☐	☐	☐
45.	Whole grain cereals and pastas such as oatmeal, brown rice, whole cornmeal, and whole wheat pasta?	☐	☐	☐	☐	☐
46.	3 or more servings daily of vegetables or vegetable juices? (1/2 cup = 1 serving)	☐	☐	☐	☐	☐
47.	Pies, frosted cakes, doughnuts, pastries and regular ice cream that are not reduced in fat?	☐	☐	☐	☐	☐
48.	6 or more servings daily of bread, tortillas, cereal, rice, or pasta such as macaroni, noodles, and spaghetti? (1/2 cup or 1 slice = 1 serving)	☐	☐	☐	☐	☐
49.	Bacon, sausage, frankfurters, jerky and luncheon meats such as bologna, salami, and pepperoni?	☐	☐	☐	☐	☐

Directions: Please answer the following questions by writing your answer in the space provided.

1. What helps you decide what to eat?

2. My major concern about what I eat is:

This is the end of the Questionnaire

THANK YOU FOR PARTICIPATING!

Key for Questionnaire - Grade 11

GOAL/Criteria	Question Number(Answer Number)
NUTRITION KNOWLEDGE	
●healthy food choices	1(3), 5(1), 9(4), 13(4)
●nutrition and health/fitness	2(3), 6(2), 10(3), 14(1)
●self-responsibility for food selection	3(3), 7(4), 11(1), 15(2)
●nutrition and scholastic achievement	4(2), 8(3), 12(2), 16(3)
NUTRITION ATTITUDE	
●healthy food choices	+1, -5, +9, +13
●nutrition and health/fitness	+2, +6, +10, -14
●self-responsibility for food selection	+3, -7, -11, -15
●nutrition and scholastic achievement	+4, +8, +12, -16
NUTRITION BEHAVIORS	
Food Choices	
●sugar	1(4), 7(3), 13(4), 19(4)
●sodium	2(4), 8(4), 14(4), 20(1)
●fat	3(4), 9(2), 15(3), 21(1)
●fiber	4(4), 10(2), 16(4), 22(1)
●variety	5(4), 11(1), 17(3), 23(4)
●alcohol	6(1 or 2), 12(1 or 2), 18(1 or 2), 24(1 or 2)
Nutrition Practices	
●sugar	2, 4, 10, 14, 15, 17, 29, 32, 42
●sodium	6, 8, 9, 19, 24, 26, 36, 39, 40, 43
●fat	7, 11, 12, 13, 20, 25, 27, 34, 47, 49
●fiber	3, 5, 16, 28, 30, 31, 37, 38, 44, 45
●variety	1, 22, 23, 35, 46, 48
●beverage	21, 33
●cancer preventing foods	18, 41

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Demographic Results - Grade 11[a]

CHARACTERISTICS	Frequency	%
Gender:		
• Female	83	55.3
• Male	62	41.3
• No Response	5	3.3
Ethnicity:		
• African-American	19	12.7
• American Indian or Alaskan Native	0	0.0
• Asian or Pacific Islander	3	2.0
• Hispanic	48	32.0
• White	74	49.3
• No Response	6	4.0
People who taught you about food which is good for you:[b]		
• School cafeteria employee	7	4.7
• School nurse	8	5.3
• Teacher	134	89.3
Learned about food which is good for you from:[b]		
• Books	96	64.0
• Clubs	8	5.3
• Family members	69	46.0
• Magazine or newspapers	66	44.0
• Television or radio	65	43.3
Number of times per week you eat breakfast:		
• None	11	7.3
• One	22	14.7
• Two	22	14.7
• Three	25	16.7
• Four	8	5.3
• Five	10	6.7
• Six	14	9.3
• Seven	33	22.0
• No Response	5	3.3
Reason for not eating breakfast:		
• Am not hungry	35	23.3
• Do not feel good	8	5.3
• Do not like food served	2	1.3
• No food is available	2	1.3

CHARACTERISTICS	Frequency	%
• No one prepares the food	73	48.7
• No time to eat the food	0	0.0
• On a diet to lose weight	0	0.0
• No Response	24	16.0
Where breakfast is usually eaten on a school day:		
• At home	79	52.7
• At school cafeteria	20	13.3
• Brought breakfast to school	2	1.3
• Restaurant/fast food operation	15	10.0
• No Response	18	12.0
Number of times student eats breakfast served in the school cafeteria:		
• None	114	76.0
• One	7	4.7
• Two	7	4.7
• Three	9	6.0
• Four	1	0.7
• Five	7	4.7
• No Response	5	3.3
Number of times per week you eat lunch:		
• None	2	1.3
• One	2	1.3
• Two	5	3.3
• Three	10	6.7
• Four	13	8.7
• Five	24	16.0
• Six	10	6.7
• Seven	79	52.7
• No Response	5	3.3
Where lunch is usually eaten on a school day:		
• At home	14	9.3
• At school cafeteria	39	26.0
• Restaurant/fast food operation	83	55.3
• No Response	12	8.0
Number of times student eats lunch served in the school cafeteria:		
• None	85	56.7
• One	8	5.3
• Two	13	8.7

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CHARACTERISTICS	Frequency	%
• Three	7	4.7
• Four	9	6.0
• Five	22	14.7
• No Response	6	4.0
Reason for not eating the school lunch:		
• Costs too much	6	4.0
• Do not like food served	46	30.7
• Friends do not eat school lunch	13	8.7
• Lunch room is not pleasant and relaxing	6	4.0
• More fun to eat away from school	37	24.7
• On a diet to lose weight	3	2.0
• Wait in lunch line too long	9	6.0
• Want to bring my own lunch	0	0.0
• No Response	29	19.3

[a] n = 150
[b] n = multiple responses allowed

APPENDIX H

OBSERVED FOOD INTAKE INSTRUMENTS DEVELOPED FOR CHILDREN

- Standard Weight Form
- Observed Food Intake Form
- Demographics

School Name:____________________________ **Meal: B/L**

School Number:__________________________ **Date:**____________

Standard Weight Record

COMPONENT/MENU ITEMS	WEIGHT OF PORTION IN GRAMS
Meat/Meat Alternate	
Vegetable/Fruit	
Vegetable/Fruit	
Bread/Bread Alternate	
Milk	
Other	
Other	

School Name:________________________ **Meal: B/L**

School Number:______________________ **Date:**_________________

Observed Food Intake Form

COMPONENT/MENU ITEMS	WEIGHT OF WASTE IN GRAMS
Meat/Meat Alternate	
Vegetable/Fruit	
Vegetable/Fruit	
Bread/Bread Alternate	
Milk	
Other	
Other	

Demographics of Observed Food Intake Participants

	Breakfast[a]		Lunch[b]	
Characteristics	**Frequency**	**%**	**Frequency**	**%**
Gender				
• female	20	52.6	33	45.8
• male	18	47.4	39	54.2
Ethnicity				
• African-American	1	2.6	0	0.0
• American Indian or Alaskan Native	0	0.0	0	0.0
• Asian or Pacific Islander	0	0.0	0	0.0
• Hispanic	17	44.7	25	34.7
• White	20	52.6	47	65.3
Grade Level				
• Kindergarten	8	21.1	0	0.0
• Grade 1	7	18.4	0	0.0
• Grade 2	8	21.1	0	0.0
• Grade 3	5	13.2	14	19.4
• Grade 4	9	23.7	57	72.2
• Grade 5	1	2.6	1	1.4

[a]n = 38
[b]n = 72

APPENDIX I

HEALTH INSTRUMENTS DEVELOPED FOR CHILDREN

- Medical History Questionnaire
- Health and Physical Fitness Record

FAMILY INFORMATION

Please fill in all information that you can and return to school by your child. Please note that all information will be treated with great confidence and no information regarding your child or your family will be released to anyone without your permission. Thank you very much for your help in studying the nutrition level of the children in our state.

Child's Name:______________________________ Social Security Number__________________
(Last name) (First Name) (Middle)

Birth Date: __________ __________ __________ Age: __________ Grade:__________________
(Month) (Day) (Year)

Circle One: African-American Mexican-American Asian/Pacific Islander American Indian/Alaskan White

Has your child ever had a serious illness or does he or she have any chronic health problem? If so,

what?____

Has your child ever been hospitalized? If so, why?______________________________

Can your child take place in the regular Physical Education program? If not, why? ______________

____

Does your child take: Vitamins?______ Fluoride drops?______ Any medicine on a regular basis? If so,

what?____

Do you think this child eats well?______Yes ______No

What is his or her favorite food?______________________________________

What is least favorite food?____

Does child dislike or refuse to drink milk? ______Yes ______No

How tall is child's mother? ________ft. ________in. Weight? ___________lb.

How tall is child's father? ________ft. ________in. Weight? ___________lb.

Check any of the following which seem to run in the family:

Diabetes______ High blood pressure______ Heart trouble______

Anemia or low blood______ Cancer______ Strokes______

THANK YOU AGAIN FOR YOUR HELP IN THIS IMPORTANT STUDY.

PHYSICAL ASSESSMENT --- N.E.T. PROJECT

Student Name:________________________________ (Last) (First) (M.I.) School Name:______________ School I.D.:_________

Social Security Number._____-___-_____ Grade____ Birth Date:____ (Day) ______ (Month) _____ (Year)

Ethnic Group: African-American Mexican-American Asian/Pacific Islander American Indian/Alaskan White Other: ___________

How many times a week does student exercise at least 20 minutes other than in physical education classes:___________What exercise?_____________How long?____________

How many hours per day does student watch television?____________________________

Weight: _______Lb. _______oz. (or _________kg.) Percentile:_______

Height: _______Ft. _______in. (or _________cm.) Percentile:_______

Run in place for one minute: Pulse before:_______/min.

Pulse at end:_______/min.

After 3 min.:_______/min.

Body type:

Very thin	Moderately Thin	"Normal"	Moderately Obese	Obese

Caliper: Triceps measure (1)______(2)______(3)______ Percentile______

Subscapular measure (1)______(2)______(3)______ Percentile______

Hematocrit/Hemoglobin _______ mm/gm Not obtained ______
(Circle one)

Estimated reliability of student history:__________________ Printed name of examiner:______________________________

Date of examination:_________________ (Rev. 11/15/93)

APPENDIX J

SCHOLASTIC ACHIEVEMENT FORM DEVELOPED FOR CHILDREN

- Scholastic Achievement Record

DATE____________

SCHOLASTIC ACHIEVEMENT RECORD

School: ____

Student Name: ____

Birth Date: ____________________ Age: __________

Social Security Number: ________________________

Standardized Test Scores

Texas Assessment of Academic Skills (TAAS) ____________________________

Norm-referenced Assessment program for Texas (NAPT) ______________________

GPA ____________

SAT ____________

ACT ____________

Class Rank _______

APPENDIX K

INSTRUMENTS
DEVELOPED FOR
PARENTS AND/OR GUARDIAN

- Questionnaire
- Key
- Family Information
- Demographics

Your Name:______________________________________
Last First

Child's Name:____________________________________
Last First

Child's Social Security No. _____-____-_____

Name of Child's School:___________________________

AN ASSESSMENT OF NUTRITION EDUCATION & TRAINING NEEDS IN TEXAS

Parents or Guardians

Project Sponsored by
Texas NET Program
P.O. Box 149030
Austin, TX 78714-9030

Texas Tech University
MS 41162
Lubbock, TX 79409
FAX (806) 742-3042

TEXAS

NET

NUTRITION EDUCATION & TRAINING

Dear Parent/Guardian:

YOU and YOUR CHILD have been selected to take part in a very important research project. This project is sponsored by the Texas Department of Human Services.

Your cooperation and input are needed to respond to this questionnaire on nutrition education. The responses of participants across the state of Texas will help guide the direction for more effective nutrition education in the schools.

Please follow these guidelines in responding to the questions:

-read the directions to each section and every question carefully and respond; some of the sections have different directions and response patterns.

-after you have finished the questionnaire, check each page to be sure that you have answered all the questions.

-your answers to the questionnaire will be confidential; the results will be used for research purposes only.

THANK YOU for being a part of this special study!

DEMOGRAPHICS

DIRECTIONS: Please respond to the following questions by circling the number in front of the appropriate response.

1. Your sex:
    1. female
    2. male

2. Your ethnic identity is:
    1. African-American
    2. American Indian or Alaskan Native
    3. Asian or Pacific Islander
    4. Hispanic/Spanish
    5. White

3. Your age:
    1. 18-20
    2. 21-25
    3. 26-30
    4. 31-35
    5. 36-40
    6. 41-45
    7. 46-50
    8. 51-55
    9. over 55

4. Your relationship to the child is:
    1. father
    2. foster parent-father
    3. foster parent-mother
    4. grandfather
    5. grandmother
    6. mother

    other, please specify______________________________

5. Your educational background is:
    (CIRCLE the HIGHEST earned)
    1. less than high school diploma or GED
    2. high school diploma or GED
    3. some college
    4. college degree
    5. graduate degree

6. Your formal education in nutrition includes:
(CIRCLE YES OR NO FOR EACH RESPONSE)
- studied nutrition in high school 1. Yes 2. No
- studied nutrition in college as part of another course 1. Yes 2. No
- completed college course(s) in nutrition 1. Yes 2. No
- specify number of college credit hours in nutrition, if applicable ________

7. Number of people living in your house (both related and unrelated to your family):
____

8. Normal household income (before taxes or other deductions):
(Indicate the amount for ONLY one pay period)
week $_________
two weeks $_________
month $_________
annual $_________

9. During the last year, you have learned about food and nutrition from:
(CIRCLE YES OR NO FOR EACH RESPONSE)
- books 1. Yes 2. No
- clubs (4-H, Scouts) 1. Yes 2. No
- extension 1. Yes 2. No
- Head Start 1. Yes 2. No
- magazines, newspapers 1. Yes 2. No
- PTA (Parent, Teacher Association) meetings 1. Yes 2. No
- t.v., radio 1. Yes 2. No
- Women, Infants, and Children (WIC) 1. Yes 2. No

other, please specify________________________________

10. Would you like to know more about nutrition?
1. Yes 2. No

11. Would you like to know more about:
(CIRCLE YES OR NO FOR EACH RESPONSE)
- consumer skills 1. Yes 2. No
- dietary guidelines 1. Yes 2. No
- food preferences 1. Yes 2. No
- food safety/sanitation 1. Yes 2. No
- food traditions 1. Yes 2. No
- function of nutrients to maintain health 1. Yes 2. No
- healthy food choices 1. Yes 2. No
- nutrition and fitness 1. Yes 2. No
- nutritional needs 1. Yes 2. No
- self-responsible choices 1. Yes 2. No

other, please specify ________________________________

NUTRITION KNOWLEDGE ASSESSMENT

Directions: For each item draw a circle around the number of the **best** (most correct) answer.

1. What part of a child's daily calories should be provided by the school lunch?
   1. 1/5
   2. 1/4
   3. 1/3
   4. 1/2

2. Which of the following is a TRUE statement for healthy persons?
   1. a high-protein diet is necessary to build muscles
   2. grapefruit breaks down body fat
   3. milk is needed at all ages for calcium
   4. the color of eggs affects the nutritional value

3. Children who eat less food than is necessary will likely have:
   1. impaired mental and social development
   2. impaired moral and physical development
   3. increased mental and social development
   4. increased moral and physical development

4. The body needs SODIUM to:
   1. balance body fluids
   2. build red blood cells
   3. help fight diseases
   4. strengthen teeth and bones

5. The Food Guide Pyramid recommends daily intake of fruits to be:
   1. 1 or more servings
   2. 2 or more servings
   3. 3 or more servings
   4. 4 or more servings

6. The BEST method of saving money when buying foods is to purchase:
   1. brand names
   2. by unit pricing
   3. the largest size
   4. the smallest size

7. The food highest in CHOLESTEROL is:
   1. peanuts
   2. vegetables
   3. whole grains
   4. whole milk

8. The MOST calories are used when people:
   1. clean house
   2. ride a bicycle
   3. play racquetball
   4. walk briskly

9. The specialist with the most training in food-related problems is a:
   1. home economist
   2. nutritionist
   3. physician
   4. registered dietitian

10. Eating balanced meals helps to sustain energy for school work for:
    1. 2 hours
    2. 3 hours
    3. 4 hours
    4. 5 hours

11. The two most common nutrients lacking in American diets are:
    1. calcium and iron
    2. calcium and phosphorous
    3. vitamin C and sodium
    4. vitamin C and sugar

12. The Dietary Guidelines for Americans include all the following EXCEPT:
    1. limit dairy products
    2. maintain healthy weight
    3. use sodium in moderation
    4. use sugars in moderation

13. To prepare fresh or frozen vegetables to conserve nutrients:
    1. boil in water for 15-20 minutes
    2. cook in a little water for 5-10 minutes
    3. cook covered with water till tender
    4. simmer in butter sauce for 15 minutes

14. The BEST way to improve an inadequate diet is to:
    1. increase foods that are highly fortified
    2. increase the variety of food intake
    3. take an all-round mineral supplement
    4. take an all-round vitamin supplement

15. A possible long-term effect of eating many foods high in SUGAR is:
    1. diabetes mellitus
    2. high blood pressure
    3. obesity
    4. osteoporosis

16. People should choose the food they eat to:
    1. balance their daily intake
    2. check for high energy foods
    3. eat and watch television
    4. eat foods that they like

17. Low mental development and low physical activity of children is largely due to:
    1. deficiency of vitamin E
    2. deficiency of iron
    3. lack of calcium
    4. low intake of vitamin C

18. Preservatives are added to foods to:
    1. add more volume and weight
    2. enhance color and texture
    3. keep them from spoiling
    4. make them more nutritious

19. For a healthy diet, I would eat:
    1. a variety of foods
    2. frequent snack foods
    3. only fresh foods
    4. only highly fortified foods

20. To save money spent on food, one should select:
    1. gourmet brands
    2. national brands
    3. specialty brands
    4. store brands

21. Which of the following food groups would improve a breakfast of orange juice, whole wheat toast and low-fat milk?
    1. bread, cereal, pasta group
    2. fruit and vegetable group
    3. meat, poultry, bean group
    4. milk, yogurt, cheese group

22. A major benefit of FIBER is that it:
    1. does not cost very much
    2. helps prevent frequent colds
    3. helps prevent cancer
    4. is found in all foods

23. Hungry school children show:
    1. high attention due to low blood sugar levels
    2. high diligence due to low blood sugar levels
    3. low concentration due to low blood sugar levels
    4. low performance due to high blood sugar levels

24. FOLIC ACID is needed to:
  1. build bone structure
  2. build red blood cells
  3. maintain muscle strength
  4. release energy for action

25. The Food Guide Pyramid recommends the daily intake of bread and cereal products to be:
  1. 3 servings
  2. 4 servings
  3. 5 servings
  4. 6 servings

26. My body needs VITAMIN A for ALL of the following EXCEPT to:
  1. build bones and teeth
  2. promote cell growth
  3. promote normal vision
  4. support normal appetite

27. If we are NOT careful about what we eat we may have problems with:
  1. food expenses
  2. frequent illness
  3. health information
  4. the food chain

28. My food choices should depend on ALL of the following EXCEPT:
  1. my feelings when I eat
  2. size of serving
  3. what I usually eat
  4. what others usually eat

NUTRITION ATTITUDE ASSESSMENT

Directions: Please CIRCLE the number that best describes how you feel about each of the following statements.

		Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
1.	It is hard to make nutritious food choices when eating away from home.	5	4	3	2	1
2.	Diet is important in maintaining a healthy weight.	5	4	3	2	1
3.	I am not particularly interested in nutrition.	5	4	3	2	1

		Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
4.	Good nutrition is important to a student's ability to learn.	5	4	3	2	1
5.	People need to eat a variety of vegetables, fruits and grain products each day.	5	4	3	2	1
6.	I enjoy introducing my family to new foods.	5	4	3	2	1
7.	Breakfast is the most important meal of the day.	5	4	3	2	1
8.	Exercise is an important factor in weight control.	5	4	3	2	1
9.	I would rather give my family a vitamin pill than worry about what they eat.	5	4	3	2	1
10.	Having a School Breakfast Program is a waste of money.	5	4	3	2	1
11.	I try to follow the Dietary Guidelines for Americans.	5	4	3	2	1
12.	Special foods are not important to family celebrations.	5	4	3	2	1
13.	Snacks are an important part of a person's diet.	5	4	3	2	1
14.	The foods I eat now will affect my future health.	5	4	3	2	1
15.	How I eat does not particularly influence my child's habits.	5	4	3	2	1
16.	Eating breakfast makes no difference in children's school performance.	5	4	3	2	1
17.	It is important to lower the fat in my diet.	5	4	3	2	1

	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
18. I would rather not have my children help in preparing food for the family.	5	4	3	2	1

FOOD CHOICE ASSESSMENT

Directions: You will answer each of the following questions TWICE. In the first column, place the number of the response which indicates the choice you would make in the presence of your child. In the second column, place the number of the response which indicates the choice you would make if your child was NOT present.

child is present | child is NOT present

____ ____ 1. Which one of the following would you select for a mid-morning snack?
1. blueberry muffin
2. candy bar
3. frosted cupcake
4. orange wedges

____ ____ 2. Which one of the following would you select for your evening meal?
1. bacon sandwich
2. ham slice
3. link sausage
4. pork chop

____ ____ 3. Which one of the following would you select for a frozen refreshment?
1. banana split
2. chocolate sundae
3. ice cream cone
4. juice bar

____ ____ 4. Which one of the following breads would you use to make a sandwich for lunch?
1. french bread
2. hamburger bun
3. white bread
4. whole wheat bread

____ ____ 5. Which one of the following would you select to eat with a breakfast of orange juice, poached egg, and milk?
1. cheese slice
2. grapefruit half
3. peach slices
4. toast

child is present | child is NOT present

____ ____ 6. If you consume beer, how many beers would you drink per day?
   1. none
   2. 1-2 beers
   3. 3-4 beers
   4. 5 beers or more

____ ____ 7. Which one of the following would you select to drink with your breakfast?
   1. Kool-aid
   2. milk shake
   3. orange juice
   4. soft drink

____ ____ 8. Which one of the following would you select for a snack after work?
   1. potato chips
   2. pretzels
   3. tortilla chips
   4. unsalted popcorn

____ ____ 9. Which one of the following foods would you select for breakfast?
   1. buttered biscuit
   2. dry toast with jam
   3. jelly doughnut
   4. waffle with syrup

____ ____ 10. Which one of the following snacks would you select from a vending machine?
   1. cheese puffs
   2. popcorn
   3. potato chips
   4. pretzels

____ ____ 11. Which one of the following would you select to drink with an afternoon snack of cheese, crackers, and slice of turkey?
   1. apple juice
   2. iced tea
   3. milk shake
   4. soft drink

____ ____ 12. At a social event, how many mixed alcoholic drinks would you consume?
   1. none
   2. 1-2 drinks
   3. 3-4 drinks
   4. 5 drinks or more

child is present **child is NOT present**

____ ____ 13. If you were having friends over, which one of the following drinks would you serve?
1. Kool-aid
2. fruit punch
3. orange juice
4. soft drink

____ ____ 14. Which one of the following meats would you select for a sandwich?
1. bologna
2. ham
3. salami
4. turkey

____ ____ 15. Which one of the following drinks would you select to go with a cookie?
1. chocolate milk
2. coke float
3. skim milk
4. whole milk

____ ____ 16. Which one of the following types of crackers would you select for a snack?
1. cheese crackers
2. ritz crackers
3. saltine crackers
4. whole wheat crackers

____ ____ 17. Which one of the following would you select to drink with a mid-morning snack of orange slices and raisin cookies?
1. apple juice
2. Kool-aid
3. milk
4. soda

____ ____ 18. How many glasses of champagne would you drink at a party?
1. none
2. 1-2 glasses
3. 3-4 glasses
4. 5 glasses or more

____ ____ 19. Which one of the following desserts would you take in a sack lunch?
1. candy bar
2. chocolate chip cookies
3. frosted cupcakes
4. graham crackers

child is present **child is NOT present**

____ ____ 20. If you had friends over, which one of the following snacks would you select to serve?
   1. apple slices
   2. cheese and crackers
   3. dill pickles
   4. potato chips

____ ____ 21. Which one of the following sandwiches would you select for lunch?
   1. broiled chicken burger
   2. cheeseburger
   3. hamburger
   4. hot dog

____ ____ 22. Which one of the following would you select to eat with a serving of chicken?
   1. corn on the cob
   2. french fries
   3. macaroni
   4. spaghetti

____ ____ 23. Which one of the following would you select to eat with baked chicken, rice, and milk?
   1. biscuit
   2. corn bread
   3. gravy
   4. green beans

____ ____ 24. How many glasses of wine would you drink at a social event?
   1. none
   2. 1-2 glasses
   3. 3-4 glasses
   4. 5 glasses or more

REPORTED FOOD INTAKE

DIRECTIONS: Please mark an X inside the [ ] (bracket) which represents how often you eat or drink the food or beverage.

		Never	1-2 times per week	3-4 times per week	5-6 times per week	Daily
1.	At least five (5) different kinds of foods daily such as fruit, vegetables, bread or cereals or beans, meat, milk or cheese?	☐	☐	☐	☐	☐
2.	Jam or jelly?	☐	☐	☐	☐	☐
3.	Dried fruits?	☐	☐	☐	☐	☐
4.	Regular Kool-aid, Hi-C, gatorade or fruit drinks?	☐	☐	☐	☐	☐
5.	Whole fruit with skins or seeds, such as berries, apples, pears, and peaches?	☐	☐	☐	☐	☐
6.	Salted nuts, salted popcorn, pretzels, corn chips or potato chips?	☐	☐	☐	☐	☐
7.	Scrambled or fried eggs and egg salad?	☐	☐	☐	☐	☐
8.	Onion or garlic salt?	☐	☐	☐	☐	☐
9.	Processed American cheeses and cheese spreads?	☐	☐	☐	☐	☐
10.	Poptarts, cakes, cupcakes, frosted doughnuts, cookies, pies, or pastries sweetened with sugar?	☐	☐	☐	☐	☐
11.	The skin of poultry or the visible fat from meat?	☐	☐	☐	☐	☐
12.	Butter or margarine on dinner rolls, breads or vegetables?	☐	☐	☐	☐	☐
13.	Oily salad dressings such as ranch, thousand island, french, and italian?	☐	☐	☐	☐	☐
14.	Soft drinks?	☐	☐	☐	☐	☐

		Never	1-2 times per week	3-4 times per week	5-6 times per week	Daily
15.	Candy?	☐	☐	☐	☐	☐
16.	Whole grain breads or baked goods?	☐	☐	☐	☐	☐
17.	Canned or frozen fruit packed in heavy syrup?	☐	☐	☐	☐	☐
18.	Dark green or deep yellow vegetables such as cabbage, spinach, carrots, broccoli, tomatoes, tomato juice, and brussel sprouts? (1/2 cup = 1 serving)	☐	☐	☐	☐	☐
19.	Food that you have salted before tasting?	☐	☐	☐	☐	☐
20.	Sauces, gravies or sour cream?	☐	☐	☐	☐	☐
21.	1 or more servings of alcoholic beverage? (1 serving = 5 oz wine, 12 oz beer, 1.5 oz liquor, 80 proof)	☐	☐	☐	☐	☐
22.	2 or more servings daily of fruits or 100% fruit juices? (1/2 cup = 1 serving)	☐	☐	☐	☐	☐
23.	2 or more servings daily of milk (8 oz), yogurt (8 oz) or cheese (1 oz)?	☐	☐	☐	☐	☐
24.	Bouillon, canned or dehydrated soup mixes?	☐	☐	☐	☐	☐
25.	Whole milk (4%), or high-fat cheeses such as cheddar, creamed cottage cheese, cream cheese and processed American?	☐	☐	☐	☐	☐
26.	Vegetables, rice or pasta with salt added to the cooking water?	☐	☐	☐	☐	☐
27.	Fried meats such as fried chicken, chicken fried steak, steak fingers, breaded fish and deep-fat fried nuggets?	☐	☐	☐	☐	☐
28.	Nuts?	☐	☐	☐	☐	☐
29.	Ice cream, sherbets or popsicles?	☐	☐	☐	☐	☐

		Never	1-2 times per week	3-4 times per week	5-6 times per week	Daily
30.	Raw vegetables?	☐	☐	☐	☐	☐
31.	Dishes made with dry beans and peas?	☐	☐	☐	☐	☐
32.	Coffee or tea sweetened with sugar or honey?	☐	☐	☐	☐	☐
33.	6 or more glasses of water daily? (1 glass = 8 oz)	☐	☐	☐	☐	☐
34.	Fried and/or pan fried breaded vegetables, such as french fries, okra, zucchini, hush puppies and snack chips?	☐	☐	☐	☐	☐
35.	2 or more servings daily of meat, poultry, fish (2 1/2 - 3 oz), dry beans (1/2 cup), eggs (1) or peanut butter (2 T.)?	☐	☐	☐	☐	☐
36.	Regular cured or processed meats such as ham, bacon, sausage, frankfurters and pepperoni that are not reduced in salt?	☐	☐	☐	☐	☐
37.	Potatoes, corn and peas?	☐	☐	☐	☐	☐
38.	Popcorn?	☐	☐	☐	☐	☐
39.	Regular TV dinners, frozen entrees not reduced in salt?	☐	☐	☐	☐	☐
40.	Vegetables canned with salt or frozen vegetables with sauce?	☐	☐	☐	☐	☐
41.	Citrus fruits, citrus juices, berries, peaches, melons, green and leafy vegetables, tomatoes, tomato juice, cauliflower, green peppers, and sweet potatoes? (1/2 cup = 1 serving)	☐	☐	☐	☐	☐
42.	Honey, molasses and syrup?	☐	☐	☐	☐	☐
43.	Soy sauce, teriyaki sauce and meat tenderizer?	☐	☐	☐	☐	☐
44.	Cooked fresh or frozen vegetables?	☐	☐	☐	☐	☐

		Never	1-2 times per week	3-4 times per week	5-6 times per week	Daily
45.	Whole grain cereals and pastas such as oatmeal, brown rice, whole cornmeal, and whole wheat pasta?	☐	☐	☐	☐	☐
46.	3 or more servings daily of vegetables or vegetable juices? (1/2 cup = 1 serving)	☐	☐	☐	☐	☐
47.	Pies, frosted cakes, doughnuts, pastries and regular ice cream that are not reduced in fat?	☐	☐	☐	☐	☐
48.	6 or more servings daily of bread, tortillas, cereal, rice, or pasta such as macaroni, noodles, and spaghetti? (1/2 cup or 1 slice = 1 serving)	☐	☐	☐	☐	☐
49.	Bacon, sausage, frankfurters, jerky and luncheon meats such as bologna, salami, and pepperoni?	☐	☐	☐	☐	☐

Directions: Please answer the following questions by writing your answer in the space provided.

1. What helps you decide what to eat?

____

____

____

____

2. My major concern about what I eat is:

____

____

____

____

3. My major concern about what my child eats is:

____

____

____

____

This is the end of the Questionnaire

THANK YOU FOR PARTICIPATING!

Key for Questionnaire - Parents

GOAL/Criteria	Question Number(Answer Number)
NUTRITION KNOWLEDGE	
●healthy food choices	1(3), 7(4), 14(2), 21(3)
●nutrition and health/fitness	2(3), 8(3), 15(3), 22(3)
●self-responsibility for food selection	28(4), 9(4), 16(1), 27(2)
●nutrition and scholastic achievement	3(1), 10(3), 17(2), 23(3)
●nutritional needs	4(1), 11(1), 24(2), 26(4)
●Dietary Guidelines for Americans	5(2), 12(1), 19(1), 25(4)
●nutritional life/consumer skills	6(2), 13(2), 18(3), 20(4)
NUTRITION ATTITUDE	
●healthy food choices	-1, +7, +13
●nutrition and health/fitness	+2, +8, +14
●self-responsibility for food selection	-3, -9, -15
●nutrition and scholastic achievement	+4, -10, -16
●Dietary Guidelines for Americans	+5, +11, +17
●food traditions	+6, -12, -18
NUTRITION BEHAVIORS	
Food Choices	
●sugar	1(4), 7(3), 13(3), 19(4)
●sodium	2(4), 8(4), 14(4), 20(1)
●fat	3(4), 9(2), 15(3), 21(1)
●fiber	4(4), 10(2), 16(4), 22(1)
●variety	5(4), 11(1), 17(3), 23(4)
●alcohol	6(1 or 2), 12(1 or 2), 18(1 or 2), 24(1 or 2)
Reported Food Intake	
●sugar	2, 4, 10, 14, 15, 17, 29, 32, 42
●sodium	6, 8, 9, 19, 24, 26, 36, 39, 40, 43
●fat	7, 11, 12, 13, 20, 25, 27, 34, 47, 49
●fiber	3, 5, 16, 28, 30, 31, 37, 38, 44, 45
●variety	1, 22, 23, 35, 46, 48
●beverage	21, 33
●cancer preventing foods	18, 41

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FAMILY INFORMATION

Please fill in all information that you can and return to school by your child. Please note that all information will be treated with great confidence and no information regarding your child or your family will be released to anyone without your permission. Thank you very much for your help in studying the nutrition level of the children in our state.

Child's Name: ______________________________ Social Security Number __________
(Last name) (First Name) (Middle)

Birth Date: ________ (Day) ________ (Month) ________ (Year) Age: ________ Grade: ______________

Circle One: African-American Mexican-American Asian/Pacific Islander American Indian/Alaskan White

Has this child ever had a serious illness or any chronic health problem? Yes___ No___. If so, what?______________________________

Has this child ever been hospitalized? Yes___ No___. If so, why?______________________

Does this child have any handicap? Yes___ No___. If so, what?______________________

Does this child take part in the regular Physical Education program? Yes___ No___. If not, why?______
____

How many hours each day does child usually watch T.V.?______________

Does this child take: Vitamins?_____ Fluoride drops?_____ Any medicine on a regular basis? If so, what?______________________________

Do you think this child eats well?______Yes ______No

Does this child drink milk? _____Yes _____No

How tall is this child's mother? _______ft. _______in. Weight? _________lb.

How tall is this child's father? _______ft. _______in. Weight? _________lb.

Check any of the following which seem to run in the family:

Diabetes_____ High blood pressure_____ Heart trouble_____

Anemia or low blood_____ Cancer______ Strokes_____

THANK YOU AGAIN FOR YOUR HELP IN THIS IMPORTANT STUDY.

11/15/93

Demographic Results - Parents[a]

CHARACTERISTICS	Frequency	%
Gender:		
• Female	59	93.7
• Male	4	6.3
Ethnicity:		
• African-American	0	0.0
• American Indian or Alaskan Native	0	0.0
• Asian or Pacific Islander	0	0.0
• Hispanic	10	15.9
• White	53	84.1
Age:		
• 18 - 20	0	0.0
• 21 - 25	0	0.0
• 26 - 30	4	6.3
• 31 - 35	21	33.3
• 36 - 40	30	47.6
• 41 - 45	7	11.1
• 46 - 50	1	1.6
• 51 - 55	0	0.0
• over 55	0	0.0
Relationship to child:		
• Father	4	6.3
• Foster parent-father	0	0.0
• Foster parent-mother	0	0.0
• Grandfather	0	0.0
• Grandmother	0	0.0
• Mother	59	93.7
Educational Background:		
• Less than high school diploma	3	4.8
• High school diploma or GED	20	31.7
• Some College	23	36.5
• College Degree	14	22.2
• Graduate Degree	3	4.8
Educational Background in Nutrition:[b]		
• Never studied nutrition	6	9.5
• Studied nutrition in high school	39	61.9
• Studied nutrition in college as part of another course	12	19.0

[a] n = 63

[b] n = multiple responses allowed

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APPENDIX L

INSTRUMENT
DEVELOPED FOR
EDUCATORS

- Questionnaire
- Key
- Demographics

- Complete the enclosed Educator's Questionnaire.

- Administer the questionnaires to your students: (Directions are provided on each instrument. Each student's first and last name MUST be written on their booklets. You may answer students' questions on how to respond but not what the response should be. Please assure the students that this is not a test that will affect their grade. It is estimated that it will take about 40 minutes to complete these instruments.)

- Send home to parents for completion the following: (a) Student Consent Form, (b) Family Medical History and (c) Parent Questionnaire. (These need to be returned to school as soon as possible. Your reminding the students to bring their completed parental forms can make a major difference.)

THANK YOU! THANK YOU!

Name: ______________________________
Last First

School Name: ______________________________

AN ASSESSMENT OF NUTRITION EDUCATION & TRAINING NEEDS IN TEXAS

Educators

Project Sponsored by
Texas NET Program
P.O. Box 149030
Austin, TX 78714-9030

Texas Tech University
MS 41162
Lubbock, TX 79409
FAX (806) 742-3042

TEXAS
NET
NUTRITION EDUCATION & TRAINING

Dear Educator:

YOU have been selected to take part in a very important research project. This project is sponsored by the Texas Department of Human Services.

Your cooperation and input are needed to respond to this questionnaire on nutrition education. The responses of participants across the state of Texas will help guide the direction for more effective nutrition education in the schools.

Please follow these guidelines in responding to the questions:

-read the directions to each section and every question carefully and respond; some of the sections have different directions and response patterns.

-after you have finished the questionnaire, check each page to be sure that you have answered all the questions.

-your answers to the questionnaire will be confidential; the results will be used for research purposes only.

THANK YOU for being a part of this special study!

DEMOGRAPHICS

Directions: Please respond to the following questions by circling the number in front of the appropriate response.

1. Your sex is:
   1. female
   2. male

2. Your ethnic background is:
   1. African-American
   2. American Indian or Alaskan Native
   3. Asian or Pacific Islander
   4. Hispanic/Spanish
   5. White

3. Your age is:
   1. 20-25
   2. 26-30
   3. 31-35
   4. 36-40
   5. 41-45
   6. over 46

4. Your educational background is:
   1. Bachelor's degree
   2. Master's degree
   3. Doctoral degree

   other, please specify______________________________

5. Number of years of teaching experience (include present year):
   1. less than five
   2. 5-10
   3. 11-20
   4. 21-30
   5. more than 30

6. You are a teacher of:

01. art
02. competitive sports
03. English
04. foreign language
05. health & physical education
06. home economics
07. interdisciplinary
08. math
09. music
10. physical education
11. reading
12. science
13. social studies
14. special education

other, please specify ______________________________

7. Your formal education in nutrition is:
(CIRCLE YES OR NO FOR EACH RESPONSE)

- studied nutrition in high school 1. Yes 2. No
- studied nutrition in college as part of another course 1. Yes 2. No
- completed college course(s) in nutrition 1. Yes 2. No
- specify number of college credit hours in nutrition, if applicable ______

8. Health-related problems which your students have:
(CIRCLE YES OR NO FOR EACH RESPONSE)

- allergy 1. Yes 2. No
- anemia 1. Yes 2. No
- anorexia nervosa 1. Yes 2. No
- asthma 1. Yes 2. No
- bulimia 1. Yes 2. No
- cancer 1. Yes 2. No
- dental 1. Yes 2. No
- diabetes 1. Yes 2. No
- overweight 1. Yes 2. No
- physically challenged 1. Yes 2. No
- pregnancy 1. Yes 2. No
- skin irritation 1. Yes 2. No
- underweight 1. Yes 2. No

other, please specify ______________________________

9. Do you teach any nutrition concepts in your classes?
1. Yes 2. No

10. During the last year, you have learned about food and nutrition from:
(CIRCLE YES OR NO FOR EACH RESPONSE)

• family members	1. Yes	2. No
• friends	1. Yes	2. No
• school cafeteria employee	1. Yes	2. No
• school nurse	1. Yes	2. No
• teachers	1. Yes	2. No

other, please specify ______________________________

11. During the last year, you have learned about food and nutrition from:
(CIRCLE YES OR NO FOR EACH RESPONSE)

• books	1. Yes	2. No
• clubs (4-H, Scouts)	1. Yes	2. No
• magazines, newspapers	1. Yes	2. No
• t.v., radio	1. Yes	2. No

other, please specify ______________________________

12. Would you like to know more about nutrition?
1. Yes 2. No

13. Would you like to know more about:
(CIRCLE YES OR NO FOR EACH RESPONSE)

• consumer skills	1. Yes	2. No
• dietary guidelines	1. Yes	2. No
• food preferences	1. Yes	2. No
• food safety/sanitation	1. Yes	2. No
• food traditions	1. Yes	2. No
• function of nutrients to maintain health	1. Yes	2. No
• healthy food choices	1. Yes	2. No
• nutrition and fitness	1. Yes	2. No
• nutritional needs	1. Yes	2. No
• self-responsible choices	1. Yes	2. No

other, please specify ______________________________

14. Would you like to know about the relationship between nutrition and:
(CIRCLE YES OR NO FOR EACH RESPONSE)

• health	1. Yes	2. No
• physical fitness	1. Yes	2. No
• scholastic achievement	1. Yes	2. No

other, please specify ______________________________

15. What method of training in nutrition would you prefer?
(CIRCLE ONLY ONE)

01. group discussion
02. inservice
03. lecture
04. panel discussion
05. video cassettes/media
06. workshop

other, please specify ________________________________

NUTRITION KNOWLEDGE ASSESSMENT

Directions: For each item draw a circle around the number of the best (most correct) answer.

1. Which of the following food groups would improve a breakfast of **orange juice, whole wheat toast and low-fat milk**?
   1. bread, cereal, pasta group
   2. fruit and vegetable group
   3. meat, poultry, bean group
   4. milk, yogurt, cheese group

2. A major benefit of FIBER is that it:
   1. does not cost very much
   2. helps prevent cancer
   3. helps prevent colds
   4. is found in all foods

3. The specialist with the most training in food-related problems is a:
   1. home economist
   2. nutritionist
   3. physician
   4. registered dietitian

4. Eating balanced meals helps to sustain energy for school work:
   1. 1 hour
   2. 2 hours
   3. 3 hours
   4. 4 hours

5. The school noon lunch should include what part of a child's calories for one day?
   1. 1/5
   2. 1/4
   3. 1/3
   4. 1/2

6. The Food Guide Pyramid recommends daily intake of fruits to be:
   1. 1 or more servings
   2. 2 or more servings
   3. 3 or more servings
   4. 4 or more servings

7. The utensils used to prepare raw meat and poultry should be carefully washed in:
   1. baking soda and water solution
   2. bleach and water solution
   3. hot soapy water solution
   4. dishwashing detergent solution

8. Breakfast should contain about:
   1. 1/4 of the daily nutrient requirements
   2. 1/3 of the daily nutrient requirements
   3. 1/2 of the daily nutrient requirements
   4. 2/3 of the daily nutrient requirements

9. A possible long-term effect of eating many foods high in SUGAR is:
   1. diabetes mellitus
   2. high blood pressure
   3. obesity
   4. osteoporosis

10. People should choose the food they eat to:
    1. balance their daily intake
    2. check for high energy foods
    3. eat and watch television
    4. eat foods that they like

11. Children who eat less food than is necessary will likely have:
    1. impaired mental and social development
    2. impaired moral and physical development
    3. increased mental and social development
    4. increased moral and physical development

12. The body needs SODIUM to:
    1. build red blood cells
    2. decrease blood pressure
    3. equalize fluid level
    4. support normal appetite

13. The Food Guide Pyramid recommends the daily intake of bread and cereal products to be:
    1. 3 servings
    2. 4 servings
    3. 5 servings
    4. 6 servings

14. To safely roast poultry, the internal temperature thermometer reading should be:
   1. 165° to 170°
   2. 170° to 175°
   3. 180° to 185°
   4. 190° to 195°

15. When a nutrition lesson is introduced, teachers need to use FOCUS/SET to:
   1. change the pace
   2. concentrate on content
   3. make a transition
   4. motivate the students

16. The food highest in CHOLESTEROL is:
   1. peanuts
   2. vegetables
   3. whole grains
   4. whole milk

17. DIETARY IRON is important to the female athlete in preventing:
   1. anorexia nervosa
   2. bulimia
   3. sports anemia
   4. tachycardia

18. When children participate in the school breakfast program, their achievement test scores:
   1. remain the same as before
   2. show a decrease
   3. show an increase
   4. are the same as nonparticipants

19. B-complex vitamins are needed in the body to:
   1. balance the fluid level
   2. build teeth and bones
   3. fight infections
   4. store reserve energy

20. For a healthy diet, I would eat:
   1. a variety of foods
   2. frequent snack foods
   3. only fresh foods
   4. only highly fortified foods

21. Unpasteurized dried eggs must be cooked thoroughly to prevent the formation of:
   1. bacillus cereus
   2. C. botulinum
   3. E. coli
   4. salmonella

22. To evaluate nutrition education, the MOST discriminating test item is the:
   1. essay
   2. matching
   3. multiple choice
   4. alternate response

23. Low mental development and low physical activity of children is largely due to:
   1. deficiency of vitamin E
   2. deficiency of iron
   3. lack of calcium
   4. low intake of vitamin C

24. The MOST effective method of teaching attitudes toward nutrition is:
   1. brainstorming
   2. group investigation
   3. independent study
   4. simulation

25. The FIRST consideration in organizing instruction should be the:
   1. conceptual outline
   2. curricula materials
   3. evaluation instruments
   4. instructional objectives

26. The BEST refrigerator temperature for the temporary storage of food is:
   1. 32° - 36° F
   2. 36° - 40° F
   3. 40° - 44° F
   4. 44° - 48° F

27. If we are NOT careful about what we eat we may have problems with:
   1. food expenses
   2. frequent illness
   3. health information
   4. the food chain

28. The BEST way to improve an inadequate diet is to:
   1. increase foods that are highly fortified
   2. increase the variety of food intake
   3. take an all-round mineral supplement
   4. take an all-round vitamin supplement

29. Which of the following is a TRUE statement?
   1. a high-protein diet is necessary to build muscles
   2. grapefruit breaks down body fat
   3. milk is needed at all ages for calcium
   4. the color of eggs affects the nutritional value

30. Food choices should depend on all of the following EXCEPT:
   1. my feelings when I eat
   2. size of serving
   3. what I usually eat
   4. what others usually eat

31. My body needs VITAMIN A for ALL of the following EXCEPT to:
   1. build bones and teeth
   2. promote cell growth
   3. promote normal vision
   4. support normal appetite

32. The Dietary Guidelines for Americans include ALL the following EXCEPT:
   1. limit dairy products
   2. maintain healthy weight
   3. use sodium in moderation
   4. use sugars in moderation

NUTRITION ATTITUDE ASSESSMENT

Directions: Please CIRCLE the number that best describes how you feel about each of the following statements.

		Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
1.	It is hard to make nutritious food choices when eating away from home.	5	4	3	2	1
2.	Exercise is an important factor in weight control.	5	4	3	2	1
3.	I would rather take a vitamin pill than think about what I eat.	5	4	3	2	1
4.	Breakfast is an important meal for good daily performance.	5	4	3	2	1
5.	It is important to know about the nutrients we need.	5	4	3	2	1
6.	It is important to lower the fat in my diet.	5	4	3	2	1

		Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
7.	Too much money is spent on food safety and sanitation measures.	5	4	3	2	1
8.	The nutrients we select have a major role in maintaining a healthy body.	5	4	3	2	1
9.	Nutrition information should be part of what children learn at school.	5	4	3	2	1
10.	Breakfast is the most important meal of the day.	5	4	3	2	1
11.	Diet is important in maintaining a healthy weight.	5	4	3	2	1
12.	I am not particularly interested in nutrition.	5	4	3	2	1
13.	Having a school breakfast program is a waste of money.	5	4	3	2	1
14.	I like to know about the nutrients we need in our daily diets.	5	4	3	2	1
15.	I try to follow the US Dietary Guidelines for Americans.	5	4	3	2	1
16.	Safety checks should be made regularly by family members in their home kitchens.	5	4	3	2	1
17.	Too much emphasis is placed on the functions of nutrients in maintaining health.	5	4	3	2	1
18.	Nutrition education makes little difference in changing the eating behavior of people.	5	4	3	2	1
19.	Snacks are an important part of a person's diet.	5	4	3	2	1

		Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
20.	The foods I eat now will affect my future health.	5	4	3	2	1
21.	How I eat does not particularly influence my students' habits.	5	4	3	2	1
22.	Good nutrition is important to a student's ability to learn.	5	4	3	2	1
23.	We can choose our daily diets more effectively when we are aware of nutritional needs.	5	4	3	2	1
24.	People need to eat a variety of vegetables, fruits and grain products each day.	5	4	3	2	1
25.	Safety and sanitary procedures should be followed by food service businesses.	5	4	3	2	1
26.	I like to read about how foods and wellness are related.	5	4	3	2	1
27.	I like to keep up with new information on nutrition.	5	4	3	2	1

FOOD CHOICE ASSESSMENT

Directions: You will answer each of the following questions TWICE. In the first column, place the number of the response which indicates the choice you would make in the presence of your students. In the second column, place the number of the response which indicates the choice you would make if your students are NOT present.

students are present **student are NOT present**

_____ _____ 1. Which one of the following would you select for a mid-morning snack?
   1. blueberry muffin
   2. candy bar
   3. frosted cupcake
   4. orange wedges

_____ _____ 2. Which one of the following would you select for your evening meal?
   1. bacon sandwich
   2. ham slice
   3. link sausage
   4. pork chop

_____ _____ 3. Which one of the following would you select for a frozen refreshment?
   1. banana split
   2. chocolate sundae
   3. ice cream cone
   4. juice bar

_____ _____ 4. Which one of the following breads would you use to make a sandwich for lunch?
   1. french bread
   2. hamburger bun
   3. white bread
   4. whole wheat bread

_____ _____ 5. Which one of the following would you select to eat with a breakfast of orange juice, poached egg, and milk?
   1. cheese slice
   2. grapefruit half
   3. peach slices
   4. toast

_____ _____ 6. If you consume beer, how many beers would you drink per day?
   1. none
   2. 1-2 beers
   3. 3-4 beers
   4. 5 beers or more

students are present | student are NOT present

____ ____ 7. Which one of the following would you select to drink with your breakfast?
   1. Kool-aid
   2. milk shake
   3. orange juice
   4. soft drink

____ ____ 8. Which one of the following would you select for a snack after work?
   1. potato chips
   2. pretzels
   3. tortilla chips
   4. unsalted popcorn

____ ____ 9. Which one of the following foods would you select for breakfast?
   1. buttered biscuit
   2. dry toast with jam
   3. jelly doughnut
   4. waffle with syrup

____ ____ 10. Which one of the following snacks would you select from a vending machine?
   1. cheese puffs
   2. popcorn
   3. potato chips
   4. pretzels

____ ____ 11. Which one of the following would you select to drink with an afternoon snack of cheese, crackers, and slice of turkey?
   1. apple juice
   2. iced tea
   3. milk shake
   4. soft drink

____ ____ 12. At a social event, how many mixed alcoholic drinks would you consume?
   1. none
   2. 1-2 drinks
   3. 3-4 drinks
   4. 5 drinks or more

____ ____ 13. If you were having friends over, which one of the following drinks would you serve?
   1. Kool-aid
   2. fruit punch
   3. orange juice
   4. soft drink

students are present   student are NOT present

____ ____ 14. Which one of the following meats would you select for a sandwich?

1. bologna
2. ham
3. salami
4. turkey

____ ____ 15. Which one of the following drinks would you select to go with a cookie?

1. chocolate milk
2. coke float
3. skim milk
4. whole milk

____ ____ 16. Which one of the following types of crackers would you select for a snack?

1. cheese crackers
2. ritz crackers
3. saltine crackers
4. whole wheat crackers

____ ____ 17. Which one of the following would you select to drink with a mid-morning snack of orange slices and raisin cookies?

1. apple juice
2. Kool-aid
3. milk
4. soda

____ ____ 18. How many glasses of champagne would you drink at a party?

1. none
2. 1-2 glasses
3. 3-4 glasses
4. 5 glasses or more

____ ____ 19. Which one of the following desserts would you send in your sack lunch?

1. candy bar
2. chocolate chip cookies
3. frosted cupcakes
4. graham crackers

____ ____ 20. If you had friends over, which one of the following snacks would you select to serve?

1. apple slices
2. cheese and crackers
3. dill pickles
4. potato chips

students are present | student are NOT present

____ ____ 21. Which one of the following sandwiches would you select for lunch?
1. broiled chicken burger
2. cheeseburger
3. hamburger
4. hot dog

____ ____ 22. Which one of the following would you select to eat with a serving of chicken?
1. corn on the cob
2. french fries
3. macaroni
4. spaghetti

____ ____ 23. Which one of the following would you select to eat with baked chicken, rice, and milk?
1. biscuit
2. corn bread
3. gravy
4. green beans

____ ____ 24. How many glasses of wine would you drink at a social event?
1. none
2. 1-2 glasses
3. 3-4 glasses
4. 5 glasses or more

NUTRITION EDUCATION

Directions: Please respond to the following questions by circling the number in front of the appropriate response.

1. How do you teach nutrition concepts:
(CIRCLE YES OR NO FOR EACH RESPONSE)
- as a separate course or subject 1. Yes 2. No
- as part of the school lunch program 1. Yes 2. No
- integrated in other subject matter (history, science, math, etc.) 1. Yes 2. No
- do not teach nutrition 1. Yes 2. No

2. The total number of hours you teach nutrition per class per semester:
   1. 0
   2. 1-10 hours
   3. 11-20 hours
   4. 21-30 hours
   5. 31-40 hours
   6. over 40

   other, please specify ____________________________________

3. In which of the following subjects do you teach nutrition concepts?
   (CIRCLE YES OR NO FOR EACH RESPONSE)

• health	1. Yes	2. No
• home economics	1. Yes	2. No
• math	1. Yes	2. No
• physical education	1. Yes	2. No
• science	1. Yes	2. No
• social studies	1. Yes	2. No

other, please specify ____________________________________

4. The person that functions as the nutrition coordinator in my school is:
   (CIRCLE YES OR NO FOR EACH RESPONSE)

• cafeteria manager	1. Yes	2. No
• food service director	1. Yes	2. No
• health teacher	1. Yes	2. No
• home economics teacher	1. Yes	2. No
• no one	1. Yes	2. No
• principal	1. Yes	2. No
• school nurse	1. Yes	2. No

other, please specify ____________________________________

5. Resources used to help teachers in your school acquire nutrition knowledge are:
   (CIRCLE YES OR NO FOR EACH RESPONSE)

• American Cancer Society	1. Yes	2. No
• American Dairy Council	1. Yes	2. No
• American Heart Association	1. Yes	2. No
• American Milk Producers Incorporated	1. Yes	2. No
• Cooperative Extension Service	1. Yes	2. No
• Inservice training	1. Yes	2. No
• NET resource materials	1. Yes	2. No
• NET workshops	1. Yes	2. No
• TEA workshops and materials	1. Yes	2. No
• textbooks	1. Yes	2. No

other, please specify ____________________________________

6. Nutrition education curriculum guides available in your school are:
(CIRCLE YES OR NO FOR EACH RESPONSE)

• Changing the Course (American Cancer Society)	1. Yes	2. No
• Education for Self-Responsibility IV Nutrition Education (TEA)	1. Yes	2. No
• guide developed for your school system	1. Yes	2. No
• Heart Smart (American Heart Association) Getting to Know Your Heart	1. Yes	2. No
• Project TEACH (Texas Education & Agriculture Cooperating for Health)	1. Yes	2. No

other, please specify ______________________________

7. Which nutrition education curriculum guides do you use?
(CIRCLE YES OR NO FOR EACH RESPONSE)

• Changing the Course (American Cancer Society)	1. Yes	2. No
• Education for Self-Responsibility IV Nutrition Education (TEA)	1. Yes	2. No
• guide developed for your school system	1. Yes	2. No
• Heart Smart (American Heart Association) Getting to Know Your Heart	1. Yes	2. No
• Project TEACH (Texas Education & Agriculture Cooperating for Health)	1. Yes	2. No

other, please specify ______________________________

8. Key concepts you teach in nutrition include:
(CIRCLE YES OR NO FOR EACH RESPONSE)

• consumer skills	1. Yes	2. No
• dietary guidelines	1. Yes	2. No
• food preferences	1. Yes	2. No
• food safety/sanitation	1. Yes	2. No
• food traditions	1. Yes	2. No
• function of nutrients to maintain health	1. Yes	2. No
• healthy food choices	1. Yes	2. No
• nutrition and fitness	1. Yes	2. No
• nutritional needs	1. Yes	2. No
• self-responsible choices	1. Yes	2. No

other, please specify ______________________________

9. In your opinion, the three most effective methods of teaching nutrition for all students are:
(CIRCLE THREE (3) RESPONSE ONLY)

01. activities in the cafeteria
02. computers
03. cooperative learning
04. demonstrations
05. discussions
06. field trips
07. food preparation by students
08. group work
09. lectures
10. magazines
11. media (film, video)
12. overhead transparencies
13. posters
14. reference books
15. resource person(s)
16. role playing and games
17. textbooks

other, please specify______________________________

10. In your opinion, the three most effective methods of teaching nutrition to multicultural/minority students are:
(CIRCLE THREE (3) RESPONSE ONLY)

01. activities in the cafeteria
02. computers
03. cooperative learning
04. demonstrations
05. discussions
06. field trips
07. food preparation by students
08. group work
09. lectures
10. magazines
11. media (film, video)
12. overhead transparencies
13. posters
14. reference books
15. resource person(s)
16. role playing and games
17. textbooks

other, please specify______________________________

11. The three people you involve most in teaching nutrition are:
(CIRCLE THREE (3) RESPONSE ONLY)
01. cooperative extension home economist
02. dentist
03. dietitian
04. educational representative of association or trade agency
05. government commodity foods representative
06. classroom teacher
07. public health specialist
08. physician
09. school food service director
10. school food service manager
11. school nurse
12. university teacher

other, please specify ____________________________________

12. Rank the following factors from "1" as most effective in teaching nutrition to "5" as least effective.
_____ aid and encouragement from school administrators
_____ aid and encouragement from school food service personnel
_____ current information on key nutrition issues
_____ inservice training for teachers
_____ nutrition education curriculum

13. Which of the following inhibit teaching nutrition?
(CIRCLE YES OR NO FOR EACH RESPONSE)
- insufficient funds to support nutrition education 1. Yes 2. No
- lack of interest among school administrators & teachers 1. Yes 2. No
- lack of time to plan, coordinate, implement 1. Yes 2. No
- school calendars too full with academic activities 1. Yes 2. No
- shortage of education materials 1. Yes 2. No

other, please specify ____________________________________

14. The types of nutrition education available in the cafeteria are:
(CIRCLE YES OR NO FOR EACH RESPONSE)
- display posters 1. Yes 2. No
- posted breakfast menu 1. Yes 2. No
- posted lunch menu 1. Yes 2. No
- public announcements 1. Yes 2. No
- talks on nutrition 1. Yes 2. No

other, please specify ____________________________________

15. Do you participate in nutrition education in the cafeteria?
1. Yes 2. No

16. Do you find the cafeteria a cheerful and relaxing room for students to eat their school meals?
1. Yes 2. No

17. Please check all items with which you agree:

• I sponsored a tasting party for students in the classroom this year.	1. Yes	2. No
• I participate in tasting parties in the school cafeteria.	1. Yes	2. No
• I am invited to teach nutrition in the school cafeteria.	1. Yes	2. No
• There is limited time for nutrition education in the school cafeteria.	1. Yes	2. No
• I invite food service personnel to participate in nutrition education in the classroom.	1. Yes	2. No
• My students are encouraged to notice nutrition posters and materials in the cafeteria.	1. Yes	2. No
• I eat meals regularly in the cafeteria.	1. Yes	2. No

This is the end of the Questionnaire
THANK YOU FOR PARTICIPATING!

Key for Questionnaire - Educators

GOAL/Criteria	Question Number(Answer Number)
NUTRITION KNOWLEDGE	
●healthy food choices	1(3), 8(2), 16(4), 28(2)
●nutrition and health/fitness	2(2), 9(3), 17(3), 29(3)
●self-responsibility for food selection	3(4), 10(1), 27(2), 30(4)
●nutrition and scholastic achievement	4(4), 11(1), 18(3), 23(2)
●nutritional needs	5(3), 12(3), 19(3), 31(4)
●Dietary Guidelines for Americans	6(2), 13(4), 20(1), 32(1)
●food safety/sanitation skills	7(3), 14(3), 21(4), 26(2)
●effective methods of teaching nutrition	15(4), 22(3), 24(4), 25(4)
NUTRITION ATTITUDE	
●healthy food choices	-1, +10, +19
●nutrition and health/fitness	+2, +11, +20
●self-responsibility for food selection	-3, -12, -21
●nutrition and scholastic achievement	+4, -13, +22
●nutritional needs	+5, +14, +23
●Dietary Guidelines for Americans	+6, +15, +24
●food safety/sanitation	-7, +16, +25
●functions of nutrients in maintaining health	+8, -17, +26
●nutrition education	+9, -18, +27
NUTRITION BEHAVIORS	
Food Choices	
●sugar	1(4), 7(3), 13(3), 19(4)
●sodium	2(4), 8(4), 14(4), 20(1)
●fat	3(4), 9(2), 15(3), 21(1)
●fiber	4(4), 10(2), 16(4), 22(1)
●variety	5(4), 11(1), 17(3), 23(4)
●alcohol	6(1 or 2), 12(1 or 2), 18(1 or 2), 24(1 or 2)

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Demographic Results - Educators[a]

CHARACTERISTICS	Frequency	%
Gender:		
• Female	34	75.6
• Male	11	24.4
Ethnicity:		
• African-American	1	2.2
• American Indian or Alaskan Native	0	0.0
• Asian or Pacific Islander	0	0.0
• Hispanic	2	4.4
• White	42	93.3
Age:		
• 20 - 25	1	2.2
• 26 - 30	8	17.8
• 31 - 35	7	15.6
• 36 - 40	6	13.3
• 41 - 45	7	15.6
• over 46	16	35.6
Educational Background in Nutrition:[b]		
• Never studied nutrition	18	40.0
• Studied nutrition in high school	10	22.2
• Studied nutrition in college as part of another course	19	42.2
Students have the following health related problems:[b]		
• Anemia	14	31.1
• Anorexia nervosa	18	40.0
• Bulimia	14	31.1
• Cancer	12	26.7
• Dental	27	60.0
• Diabetes	20	44.4
• Overweight	34	75.6
• Skin Irritation	21	46.7
• Underweight	28	62.2

[a] n = 45

[b] n = multiple responses allowed

APPENDIX M

INSTRUMENTS
DEVELOPED FOR
FOOD SERVICE PERSONNEL

- Questionnaire - Food Service Managers
- Key - Food Service Managers
- Questionnaire - Food Service Workers
- Key - Food Service Workers
- Demographics, Managers and Workers

Name:______________________________________
Last First

School Name:______________________________

AN ASSESSMENT OF NUTRITION EDUCATION & TRAINING NEEDS IN TEXAS

Food Service Managers

Project Sponsored by
Texas NET Program
P.O. Box 149030
Austin, TX 78714-9030

Texas Tech University
MS 41162
Lubbock, TX 79409
FAX (806) 742-3042

TEXAS

NET

NUTRITION EDUCATION & TRAINING

Dear Food Service Manager:

YOU have been selected to take part in a very important research project. This project is sponsored by the Texas Department of Human Services.

Your cooperation and input are needed to respond to this questionnaire on nutrition education. The responses of participants across the state of Texas will help guide the direction for more effective nutrition education in the schools.

Please follow these guidelines in responding to the questions:

-read the directions to each section and every question carefully and respond; some of the sections have different directions and response patterns.

-after you have finished the questionnaire, check each page to be sure that you have answered all the questions.

-your answers to the questionnaire will be confidential; the results will be used for research purposes only.

THANK YOU for being a part of this special study!

DEMOGRAPHICS

Directions: Please respond to the following questions by circling the number in front of the appropriate response.

1. Your sex is:
    1. female
    2. male

2. Your ethnic background:
    1. African-American
    2. American Indian or Alaska Native
    3. Asian or Pacific Islander
    4. Hispanic/Spanish
    5. White

3. Your age is:
    1. 20-25
    2. 26-30
    3. 31-35
    4. 36-40
    5. 41-45
    6. over 46

4. Your educational background:
    (Circle the HIGHEST earned)
    1. less than high school
    2. high school
    3. some college
    4. associate degree
    5. college degree
    6. graduate degree

5. Your certification status is:
    1. ASFSA certified
    2. not certified
    3. state certified
    4. TSFSA certified
    5. other certification, please specify ________________________________

6. Years worked in FOOD SERVICE (include present year):
    1. less than 5 years
    2. 5 to 10 years
    3. 11 to 20 years
    4. 21 to 30 years
    5. more than 30 years

7. Years worked in SCHOOL FOOD SERVICE (include present year):
   1. less than 5 years
   2. 5 to 10 years
   3. 11 to 20 years
   4. 21 to 30 years
   5. more than 30 years

8. The management of the school food service is:
   1. contract
   2. self operation

9. What percentage of the menu items served at you school are prepared from raw ingredients?
   1. 0
   2. 1 - 25%
   3. 26 - 50%
   4. 51 - 75%
   5. 76 - 100%

10. Where does food preparation of menu items served at your school occur?
   1. off-site at a central kitchen or commissary
   2. on-site at the school
   3. other, please specify____

11. The breakfast program offers:
   1. ala carte items
   2. reimbursable meals
   3. both

12. Maximum time students wait in line for breakfast is:
   1. 5 minutes
   2. 10 minutes
   3. 15 minutes
   4. 20 minutes
   5. 25 minutes

13. The paid price for a student breakfast is:
   $______

14. The lunch program offers:
   1. ala carte items
   2. reimbursable meals
   3. both

15. The paid price for a student noon meal is:
   $______

16. The total time required to serve lunch to all students:
   1. less than 1 hour
   2. 1 hour
   3. 1½ hours
   4. over 1½ hours

17. Maximum time students wait in line for noon meal:
    1. less than 5 minutes
    2. 10 minutes
    3. 15 minutes
    4. 20 minutes
    5. 25 minutes

18. Which of the following are available in your school vending machine?
    1. candy
    2. coke
    3. fresh fruit
    4. salty products (nuts, pretzels)
    5. no machine available

    other, please specify____

19. Grades served by school (check those that apply):
    1. elementary/intermediate
    2. jr. high/middle school
    3. high school

20. On the average how many reimbursable meals do you serve each day?

    ____

21. Of the total student meals served, indicate the percentage which are free, reduced, and full pay.

    free _______%
    reduced _______%
    full pay _______%

22. The percentage of students enrolled in your school who participate in the lunch program is:
    01. 5 - 15%
    02. 16 - 25%
    03. 26 - 35%
    04. 36 - 45%
    05. 46 - 55%
    06. 56 - 65%
    07. 66 - 75%
    08. 76 - 85%
    09. 86 - 95%
    10. over 95%

23. Does your food service operation provide "offer" versus "serve"?
    1. yes
    2. no

24. Indicate the group number of USDA lunch pattern provided by your operation. (check those that apply):
    1. III
    2. IV
    3. V

25. Is a cycle menu used?
1. yes
2. no

26. Length of cycle? (Enter 00 if a cycle menu is not used.)

____

27. How many special dietary meals are provided per day?

____

28. Do you have problems in purchasing nutritious and appealing food economically?
1. Yes 2. No

29. Do you have problems in preparing nutritious and appealing food economically?
1. Yes 2. No

30. What INSERVICE TRAINING should be offered?
(CIRCLE YES OR NO FOR EACH RESPONSE)

• Creative ways to decrease fat and sodium in school food service menu items	1. Yes	2. No
• Guidelines on how to plan school food service menus that meet the Dietary Guidelines for Americans	1. Yes	2. No
• Guidelines on how to specify and/or purchase foods to meet the Dietary Guidelines for Americans	1. Yes	2. No
• Guidelines on how to prepare and foods to meet the Dietary Guidelines for Americans	1. Yes	2. No
• Methods to implement Dietary Guidelines for Americans without negatively affecting participation in school food service	1. Yes	2. No
• Computer skills, technology, and nutrient terminology	1. Yes	2. No

other, please specify____

31. What resources can help solve the problem?
(CIRCLE YES OR NO FOR EACH RESPONSE)

• Time to compare food products, evaluate food products, and develop new recipes	1. Yes	2. No
• Information about nutrient content of commercially processed food	1. Yes	2. No
• Computer system to analyze nutrient content of menus	1. Yes	2. No
• Marketing materials to promote nutritious menu items	1. Yes	2. No

other, please specify____

NUTRITION KNOWLEDGE ASSESSMENT

Directions: For each item draw a circle around the number of the best (most correct) answer to the question.

1. Breakfast should contain about:
   1. 1/5 of the daily nutrient requirements
   2. 1/4 of the daily nutrient requirements
   3. 1/3 of the daily nutrient requirements
   4. 1/2 of the daily nutrient requirements

2. A major benefit of FIBER is that it:
   1. does not cost very much
   2. helps prevent cancer
   3. helps prevent frequent colds
   4. is found in all foods

3. The specialist with the most training in an individual's food-related problems is a:
   1. home economist
   2. nutritionist
   3. physician
   4. registered dietitian

4. Children who eat less food than is necessary will likely have:
   1. impaired mental and social development
   2. impaired moral and physical development
   3. increased mental and social development
   4. increased moral and physical development

5. The food highest in VITAMIN A is a serving of:
   1. an orange
   2. carrot sticks
   3. raisins
   4. whole wheat bread

6. The Dietary Guidelines for Americans recommends daily intake of fruits to be:
   1. 1 or more servings
   2. 2 or more servings
   3. 3 or more servings
   4. 4 or more servings

7. If someone has high blood pressure and is following a low SODIUM diet, that individual should avoid:
   1. canned soup
   2. catfish
   3. celery
   4. whole milk

8. To sanitize wood cutting boards, the best way to clean the boards is to use a:
   1. baking soda and water solution
   2. bleach and water solution
   3. hot soapy water solution
   4. dishwashing detergent solution

9. A possible long-term effect of eating many foods high in SUGAR is:
   1. diabetes mellitus
   2. high blood pressure
   3. obesity
   4. osteoporosis

10. People should choose the food they eat to:
    1. balance their daily intake
    2. check for high energy foods
    3. eat and watch television
    4. eat foods that they like

11. Eating balanced meals helps to sustain energy for school work for:
    1. 1 hour
    2. 2 hours
    3. 3 hours
    4. 4 hours

12. The school noon lunch should include what part of a child's calories for one day?
    1. 1/5
    2. 1/4
    3. 1/3
    4. 1/2

13. The Dietary Guidelines for Americans are primarily for:
    1. adolescents
    2. children
    3. healthy people
    4. people on diets

14. The first ingredient listed on a can of peas means that peas are the:
    1. first ingredient alphabetically
    2. first ingredient by quality
    3. most ingredient by quantity
    4. most nutritious ingredient

15. To safely roast poultry, the internal temperature thermometer reading should be:
    1. 165° to 170°
    2. 170° to 175°
    3. 180° to 185°
    4. 190° to 195°

16. Which of the following food groups would improve a breakfast of orange juice, whole wheat toast and low-fat milk?
   1. bread, cereal, pasta group
   2. fruit and vegetable group
   3. meat, poultry, bean group
   4. milk, yogurt, cheese group

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   2. avoid being overweight
   3. have energy for school
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   2. 25% or less
   3. 30% or less
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   1. an advertising device to confuse the buyer
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   2. C. botulinum
   3. E. coli
   4. salmonella

22. The food highest in CHOLESTEROL is:
   1. peanuts
   2. vegetables
   3. whole grains
   4. whole milk

23. A nutrient-dense food is one that provides:
   1. few nutrients compared to calories
   2. many calories but few nutrients
   3. many calories but no nutrients
   4. many nutrients compared to calories

24. I am responsible for getting all the nutrients daily by:
  1. eating cereal and milk
  2. eating many kinds of foods
  3. eating snacks often
  4. taking a vitamin pill

25. Low mental development and low physical activity are largely due to:
  1. deficiency of vitamin E
  2. deficiency of iron
  3. lack of calcium
  4. low intake of vitamin C

26. The two most common nutrients lacking in American diets are:
  1. calcium and iron
  2. calcium and phosphorous
  3. vitamin C and selenium
  4. vitamin C and sodium

27. For a healthy diet, I would eat:
  1. a variety of foods
  2. frequent snack foods
  3. only fresh foods
  4. only highly fortified foods

28. Preservatives are added to foods to:
  1. add more volume and weight
  2. enhance color and texture
  3. keep food from spoiling
  4. make them more nutritious

29. The BEST refrigerator temperature for the temporary storage of food is:
  1. at 32° F
  2. between 36° F and 40° F
  3. between 45° F and 50° F
  4. 60° F or above

30. If we are NOT careful about what we eat we may have problems with:
  1. food expenses
  2. frequent illness
  3. health information
  4. the food chain

31. Which of the following is a TRUE statement for healthy persons?
  1. a high-protein diet is necessary to build muscles
  2. grapefruit breaks down body fat
  3. milk is needed at all ages for calcium
  4. the color of eggs affects the nutritional value

32. The BEST way to improve an inadequate diet is to increase:
   1. a variety of foods
   2. highly fortified foods
   3. organic foods
   4. food supplements

NUTRITION ATTITUDE ASSESSMENT

Directions: Please CIRCLE the number that best describes how you feel about each of the following statements.

	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
1. It is possible to make wise food choices when eating away from home.	5	4	3	2	1
2. The foods I eat now will affect my future health.	5	4	3	2	1
3. A school breakfast program is a waste of money.	5	4	3	2	1
4. It is important to lower the fat in my diet.	5	4	3	2	1
5. Too much money is spent on food safety and sanitation measures.	5	4	3	2	1
6. Breakfast is the most important meal of the day.	5	4	3	2	1
7. Exercise is an important factor in weight control.	5	4	3	2	1
8. Good nutrition is important to a student's ability to learn.	5	4	3	2	1
9. I try to follow the Dietary Guidelines for Americans.	5	4	3	2	1
10. Safety and sanitary procedures should be followed by food service businesses.	5	4	3	2	1

		Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
11.	Snacks are an important part of a person's diet.	5	4	3	2	1
12.	Diet is important in maintaining a healthy weight.	5	4	3	2	1
13.	Breakfast is not an important meal for good performance in school.	5	4	3	2	1
14.	People need to eat a variety of vegetables, fruits and grain products each day.	5	4	3	2	1
15.	Safety checks should be made regularly by family members in their home kitchens.	5	4	3	2	1

MANAGEMENT KNOWLEDGE ASSESSMENT

Directions: For each item draw a circle around the number of the best (most correct) answer to the question.

1. Merchandising the school lunch menu is important because it:
    1. helps to minimize complaints
    2. helps to motivate employees
    3. increases food acceptance by students
    4. is required by the USDA

2. How would you maintain the nutritional value of the following menu and make it more manageable for first grade students?

   Oven Fried Chicken, Baked Potato,
   Seasoned Broccoli, Fresh Orange, Milk
    1. serve chicken and milk only
    2. serve french fries in place of the baked potato
    3. serve green beans in place of broccoli
    4. serve orange wedges in place of whole orange

3. To determine the quantity of food to purchase for a weekly food order it is necessary to have available the:
    1. amount of food to purchase, number and age of children
    2. amount of food purchases, recipes, number of children
    3. number of children, number of servings, serving sizes for children
    4. recipes, number of servings, serving sizes for children

4. Batch cooking is a technique that:
   1. destroys heat sensitive vitamins
   2. is appropriate only for breakfast menu items
   3. minimizes food hold time during service
   4. slows down the serving line

5. In order to retain nutrients and color, what is the maximum recommended holding time for cooked vegetables?
   1. 10 minutes
   2. 20 minutes
   3. 30 minutes
   4. 40 minutes

6. To prepare previously refrigerated foods to serve:
   1. heat to 145° F
   2. heat to 155° F
   3. heat to 165° F
   4. place directly on the steam table

7. Estimating purchase and installation costs of a piece of equipment over the useful life of the equipment is called:
   1. auditing
   2. cost accounting
   3. depreciation
   4. value analysis

8. The marketing strategy for the school food service program should be based on
   1. availability of commodities
   2. input from students, parents, and school staff
   3. preferences of the school principal
   4. vendor bids for food and supplies

9. According to the School Lunch Pattern, the minimum weekly servings of bread or bread-alternate required for grades 4-12 (Group IV) is:
   1. 5 servings
   2. 6 servings
   3. 8 servings
   4. 10 servings

10. Information found on a purchase order includes:
    1. maximum inventory number, amount on hand, amount to purchase
    2. names of suppliers, person ordering, person receiving
    3. supplier's name and quotations from at least three suppliers
    4. supplier's name, unit of purchase, description, unit price

11. Of the following foods, the item which should be scheduled for cooking first is:
    1. baked fish
    2. baked potato
    3. fried chicken
    4. steamed broccoli

12. The appropriate temperature for serving fluid milk is:
   1. 32° F - 38° F
   2. 36° F - 40° F
   3. 38° F - 43° F
   4. 40° F - 45° F

13. The temperature danger zone for foods is between:
   1. 32° F and 150° F
   2. 40° F and 165° F
   3. 45° F and 140° F
   4. 55° F and 120° F

14. Giving students choices between menu items
   1. decreases overhead costs
   2. decreases plate waste
   3. increases operational costs
   4. speeds up the serving line

15. Based on the following school's information, what is its food cost percentage?
Revenue = $1,000,000 Meal Price = $1.00
Labor Cost = $500.00 Food Cost = $350.00
   1. 10%
   2. 35%
   3. 85%
   4. 100%

16. According to the School Lunch Pattern, the daily total requirement for vegetables and/or fruits served to grades 4-12 students (Group IV) is:
   1. 1/4 cup
   2. 1/3 cup
   3. 1/2 cup
   4. 3/4 cup

17. The recommended temperature range for storing dairy products, eggs, meat, and poultry is:
   1. -10°- 0°F
   2. 32° - 40°F
   3. 40° - 45°F
   4. 44° - 48°F

18. The most accurate method of food measurement in a school food service kitchen is:
   1. can size
   2. count
   3. volume
   4. weight

19. In order for a salad bar to qualify for meal reimbursement:
   1. all components specified by the lunch pattern must be offered
   2. parental approval is required for each student selecting the salad bar
   3. the "offer versus serve" option is not allowed
   4. the student must take at least four of the components specified by the lunch pattern

20. Refrigerated foods should be stored
   1. away from walls
   2. close together
   3. loosely wrapped
   4. on lined shelves

21. The method used to determine if foods differ in taste, odor, juiciness, or texture is:
   1. chemical analysis
   2. nutrient analysis
   3. physical analysis
   4. sensory analysis

22. Which of the following forms of milk must be offered to students?
   1. buttermilk
   2. chocolate low fat milk
   3. skim milk
   4. unflavored low fat milk

23. A list of detailed product characteristics desired by the purchaser for a specific use is called a:
   1. make-or-buy investigation
   2. packer's brand
   3. specification
   4. yield grade

24. A recipe calls for 3 tablespoons of pepper. If only a teaspoon measure is available, the cook should use:
   1. 1½ teaspoons of pepper
   2. 3 teaspoons of pepper
   3. 6 teaspoons of pepper
   4. 9 teaspoons of pepper

25. If the portion standard for green beans is ½ cup, the served portion resulting from using a #10 scoop is:
   1. hard to estimate
   2. less than the standard
   3. meeting the standard
   4. more than the standard

26. The food handling procedure most likely to lead to food contamination is:
   1. storing potatoes, onions, and bananas out of the refrigerator
   2. displaying cream-filled pastries on the cashier's stand
   3. storing leftovers in the refrigerator for later use
   4. holding food in a heat cabinet prior to service

27. The BEST tools used for quality control are:
   1. food acceptability studies
   2. portion control guidelines
   3. production sheets
   4. standardized recipes

28. Which of the following is NOT an example of a promotional technique?
   1. celebrating birthday of the month with decorated cupcakes
   2. collecting information about students' preferences for a salad bar
   3. providing a coupon for a free juice bar with the purchase of a book of 10 lunch tickets
   4. providing a customized school cup with the purchase of a milk shake

29. All of the following factors affect food cost EXCEPT:
   1. food advertising
   2. production methods
   3. purchasing methods
   4. storage management

30. Labor costs are effected by all the following factors EXCEPT:
   1. form of food purchased
   2. menu pricing system
   3. number of menu items
   4. type of production system

31. Monitoring food acceptance and plate waste are useful for all of the following EXCEPT:
   1. checking quality of food produced
   2. determining food cost
   3. evaluating new menu items
   4. planning menus

32. Marketing the school food service operation includes all of the following activities EXCEPT:
   1. defining what menu items the students prefer
   2. establishing the portion size for menu items served
   3. promoting new menu items to the students
   4. providing menu items that appeal to students

NUTRITION EDUCATION

Directions: Follow the instructions given for each item.

1. Are any of the following available in the cafeteria?
(CIRCLE YES OR NO FOR EACH RESPONSE)

• display posters	1. Yes	2. No
• posted breakfast menu	1. Yes	2. No
• posted lunch menu	1. Yes	2. No
• public announcements	1. Yes	2. No
• talks by nutrition teacher(s)	1. Yes	2. No

other, please specify____

2. Please circle yes or no for each of the following items:
    - I support tasting parties in the classroom 1. Yes 2. No
    - I support tasting parties in the school cafeteria 1. Yes 2. No
    - I am invited to teach nutrition in the classroom 1. Yes 2. No
    - There is limited time for nutrition education in the school cafeteria 1. Yes 2. No
    - I invite teachers to participate in nutrition education in the cafeteria 1. Yes 2. No
    - Students are encouraged to notice nutrition posters and materials in the cafeteria 1. Yes 2. No
    - Teachers seldom eat meals in the cafeteria 1. Yes 2. No

3. Rank the factors which inhibit teaching nutrition by writing "1" as the greatest inhibitor, "2" as the second greatest and continue, to "5" as the least inhibitor:

    _____ insufficient funds to support nutrition education
    _____ lack of interest among school administrators and teachers
    _____ lack of time to plan, coordinate, implement
    _____ school calendars too full with academic activities
    _____ shortage of educational materials

4. How many teachers eat in the school cafeteria on a daily basis?

    ____

5. How many classroom tasting parties were conducted by teachers during this school year?

    ____

6. How many cafeteria tasting parties were conducted by teachers during this school year?

    ____

7. How many times this school year were you invited to speak to students in the classroom?

    ____

8. How many times this school year did you show a video on nutrition in the school cafeteria?

    ____

This is the end of the Questionnaire
THANK YOU FOR PARTICIPATING!

Key for Questionnaire - Food Service Manager

GOAL/Criteria	Question Number(Answer Number)
NUTRITION KNOWLEDGE	
•healthy food choices	1(3), 16(2), 22(4), 32(1)
•nutrition and health/fitness	2(2), 9(3), 23(4), 31(3)
•self-responsibility for food selection	3(4), 10(1), 24(2), 30(2)
•nutrition and scholastic achievement	4(1), 11(4), 17(3), 25(2)
•nutritional needs	5(2), 12(3), 18(3), 26(1)
•Dietary Guidelines for Americans	6(2), 13(3), 19(3), 27(1)
•nutritional life/consumer skills	7(1), 14(3), 20(3), 28(3)
•food safety/sanitation	8(2), 15(3), 21(4), 29(2)
NUTRITION ATTITUDE	
•healthy food choices	+1, +6, +11
•nutrition and health/fitness	+2, +7, +12
•nutrition and scholastic achievement	-3, +8, +13
•Dietary Guidelines for Americans	+4, +9, +14
•food safety/sanitation	-5, +10, +15
MANAGEMENT KNOWLEDGE	
•marketing	1(3), 8(2), 28(2), 32(2)
•nutrition and menu planning	2(4), 9(3), 16(4), 22(4)
•procurement	3(4), 10(4), 17(2), 23(3)
•food production	4(3), 11(2), 18(4), 24(4)
•service	5(2), 12(2), 19(1), 25(2)
•sanitation and safety	6(3), 13(3), 20(1), 26(2)
•food acceptability	27(4), 14(2), 21(4), 31(2)
•financial management	7(3), 15(2), 29(1), 30(2)

BEST COPY AVAILABLE

Name:____
Last First

School Name:__________________________________

AN ASSESSMENT OF NUTRITION EDUCATION & TRAINING NEEDS IN TEXAS

Food Service Workers

Project Sponsored by
Texas NET Program
P.O. Box 149030
Austin, TX 78714-9030

Texas Tech University
MS 41162
Lubbock, TX 79409
FAX (806) 742-3042

NET

Dear Food Service Worker:

YOU have been selected to take part in a very important research project. This project is sponsored by the Texas Department of Human Services.

Your cooperation and input are needed to respond to this questionnaire on nutrition education. The responses of participants across the state of Texas will help guide the direction for more effective nutrition education in the schools.

Please follow these guidelines in responding to the questions:

-read the directions to each section and every question carefully and respond; some of the sections have different directions and response patterns.

-after you have finished the questionnaire, check each page to be sure that you have answered all the questions.

-your answers to the questionnaire will be confidential; the results will be used for research purposes only.

THANK YOU for being a part of this special study!

DEMOGRAPHICS

Directions: Please respond to the following questions by circling the number in front of the appropriate response.

1. Your sex is:
   1. female
   2. male

2. Your ethnic background:
   1. African-American
   2. American Indian or Alaska Native
   3. Asian or Pacific Islander
   4. Hispanic/Spanish
   5. White

3. Your age is:
   1. 20-25
   2. 26-30
   3. 31-35
   4. 36-40
   5. 41-45
   6. over 46

4. Your educational background is:
   (CIRCLE the HIGHEST earned)
   1. less than high school
   2. high school or GED
   3. some college
   4. associate degree
   5. college degree
   6. graduate degree

5. Your certification status is:
   1. ASFSA certified
   2. not certified
   3. state certified
   4. TSFSA certified
   5. other certification, please specify ______________________________

6. Years worked in FOOD SERVICE (include present year):
   1. less than 5 years
   2. 5 to 10 years
   3. 11 to 20 years
   4. 21 to 30 years
   5. more than 30 years

7. Years worked in SCHOOL FOOD SERVICE (include present year):
    1. less than 5 years
    2. 5 to 10 years
    3. 11 to 20 years
    4. 21 to 30 years
    5. more than 30 years

8. Your job title is: ______________________

NUTRITION KNOWLEDGE ASSESSMENT

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NUTRITION ATTITUDE ASSESSMENT

Directions: Please CIRCLE the number that best describes how you feel about each of the following statements. If you strongly agree, circle 5; agree 4; unsure 3; disagree 2; strongly disagree 1.

	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
1. It is hard to make wise food choices when eating away from home.	5	4	3	2	1
2. The foods I eat now will affect my future health.	5	4	3	2	1
3. A school breakfast program is a waste of money.	5	4	3	2	1
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5. Too much money is spent on food safety and sanitation measures.	5	4	3	2	1
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10. Safety and sanitary procedures should be followed by food service businesses.	5	4	3	2	1
11. Snacks are an important part of a person's diet.	5	4	3	2	1
12. Diet is important in maintaining a healthy weight.	5	4	3	2	1
13. Breakfast is not an important meal for good performance in school.	5	4	3	2	1
14. People need to eat a variety of vegetables, fruits and grain products each day.	5	4	3	2	1
15. Safety checks should be made regularly by family members in their home kitchens.	5	4	3	2	1

This is the end of the Questionnaire
THANK YOU FOR PARTICIPATING!

Key for Questionnaire - Food Service Workers

GOAL/Criteria	Question Number(Answer Number)
NUTRITION KNOWLEDGE	
• healthy food choices	1(3), 8(4), 15(3), 29(1)
• nutrition and health/fitness	2(3), 9(2), 22(4), 30(3)
• self-responsibility for food selection	3(4), 31(2), 16(1), 23(2)
• nutrition and scholastic achievement	4(3), 10(1), 17(3), 24(2)
• nutritional needs	5(2), 11(3), 18(3), 25(1)
• Dietary Guidelines for Americans	32(1), 12(1), 19(4), 26(3)
• nutritional life/consumer skills	6(3), 13(3), 20(1), 27(3)
• food safety/sanitation	7(2), 14(3), 21(4), 28(2)
NUTRITION ATTITUDE	
• healthy food choices	+1, +6, +11
• nutrition and health/fitness	+2, +7, +12
• nutrition and scholastic achievement	-3, +8, -13
• Dietary Guidelines for Americans	+4, +9, +14
• food safety/sanitation	-5, +10, +15

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Demographic Results - Food Service Manager[a]

CHARACTERISTICS	Frequency	%
Gender:		
• Female	35	85.4
• Male	1	2.4
• No Response	5	12.2
Ethnicity:		
• African-American	4	9.8
• American Indian or Alaskan Native	0	0.0
• Asian or Pacific Islander	0	0.0
• Hispanic	12	29.3
• White	20	48.8
• No Response	5	12.2
Age:		
• 20 - 25	1	2.4
• 26 - 30	0	0.0
• 31 - 35	8	19.5
• 36 - 40	5	12.2
• 41 - 45	5	12.2
• over 46	17	41.5
• No Response	5	12.2
Number of years of service with School Food Service:		
• Less than 5 years	11	26.8
• 5 - 10 years	11	26.8
• 11 - 20 years	9	22.0
• 21 - 30 years	4	9.8
• more than 30 years	1	2.4
• No Response	5	12.2
Maximum time students wait in line for breakfast:		
• 5 minutes	35	85.4
• 10 minutes	0	0.0
• 15 minutes	0	0.0
• 20 minutes	0	0.0
• 25 minutes	0	0.0
• No Response	6	14.6
Time required to serve lunch to all students:		
• less than 1 hours	6	14.6
• 1 hour	4	9.8
• 1 1/2 hours	13	31.7
• over 1 1/2 hours	11	26.8
• No Response	7	17.1

CHARACTERISTICS	Frequency	%
Maximum time students wait in line for lunch:		
• less than 5 minutes	28	68.3
• 10 minutes	5	12.2
• 15 minutes	1	2.4
• 20 minutes	0	0.0
• 25 minutes	0	0.0
• No Response	7	17.1

[a] n = 41

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TABLE: Demographic Results - Food Service Workers[a]

CHARACTERISTICS	Frequency	%
Gender:		
• Female	27	100.0
• Male	0	0.0
Ethnicity:		
• African-American	5	18.5
• American Indian or Alaskan Native	0	0.0
• Asian or Pacific Islander	0	0.0
• Hispanic	10	37.0
• White	12	44.4
Age:		
• 20 - 25	1	3.7
• 26 - 30	1	3.7
• 31 - 35	4	14.8
• 36 - 40	5	18.5
• 41 - 45	4	14.8
• over 46	12	44.4
Number of years service in School Food Service:		
• less than 5 years	0	0.0
• 5 to 10 years	0	0.0
• 11 to 20 years	26	96.3
• 21 to 30 years	1	3.7
• More than 30 years	0	0.0

[a]n = 27

APPENDIX N

MENU AND DIETARY COMPLIANCE
OPERATIONAL PRACTICES
INSTRUMENTS
DEVELOPED FOR
FOOD SERVICE OPERATION

- Menu Spreadsheet
- Menu Pattern Compliance/Breakfast
- Menu Pattern Compliance/Lunch, Group III, Group IV, Group V
- Dietary Guidelines Compliance
- Menu Item Planned versus Served
- Observation of Practices

School Name:

School Number:

Meal: B / L

Date:

MENU SPREADSHEET

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
MEAT/MEAT ALTERNATE					
MEAT/MEAT ALTERNATE					
VEGETABLE/ FRUIT					
VEGETABLE/ FRUIT					
VEGETABLE/ FRUIT					
BREAD/BREAD ALTERNATE					
BREAD/BREAD ALTERNATE					
MILK					
OTHER					

School Name: ______________________

School Number: ____________________ **Week of:** __________

Menu Analysis
USDA Breakfast Menu Pattern - Ages 6 and Up

COMPONENT	STANDARD	OBSERVATION	COMPLIANCE SCORE
MILK		M T W T F	
As a beverage, on cereal, or both	8 fl oz		
Fruit/Vegetable/Juice		M T W T F	
Fruit and/or vegetable or full strength fruit or vegetable juice	1/2 cup		
Bread/Bread Alternate		M T W T F	
Bread,	1 slice		
Biscuit, roll, muffin	1 serving		
Cereal	3/4 cup or 1 oz		
Meat/Meat Alternate		M T W T F	
Meat, poultry, fish	1 oz		
Cheese	1 oz		
Egg, Large	1/2		
Dry beans or peas	1/4 cup		
Peanut butter	2 Tbsp		
Nuts and/or seeds	1 oz		
		TOTAL	

School Name:________________________

School Number: ________________________ **Week of:**____________

Menu Analysis
USDA Lunch Menu Pattern - Group III

COMPONENT	STANDARD	OBSERVATION	COMPLIANCE SCORE
Meat/Meat Alternate		M T W T F	
Meat, poultry, fish	1 1/2 oz		
Cheese	1 1/2 oz		
Egg, Large	3/4		
Dry beans or peas	3/8 cup		
Peanut butter	3 Tbsp		
Vegetable/Fruit	1/2 cup	M T W T F	
Bread/Bread Alternate		M T W T F	
Bread,	1 slice		
Biscuit, roll, muffin	1 serving		
macaroni, noodles, rice, pasta, or cereal	1/2 cup		
Weekly total	8	No	
MILK		M T W T F	
Whole and unflavored low-fat, skim, or buttermilk offered	8 fl oz		
		TOTAL	

School Name:________________________

School Number:______________________ Week of:__________

Menu Analysis
USDA Lunch Menu Pattern - Group IV

COMPONENT	STANDARD	OBSERVATION	COMPLIANCE SCORE
Meat/Meat Alternate		M T W T F	
Meat, poultry, fish	2 oz		
Cheese	2 oz		
Egg, Large	1		
Dry beans or peas	1/2 cup		
Peanut butter	4 Tbsp		
Vegetable/Fruit	3/4 cup	M T W T F	
Bread/Bread Alternate		M T W T F	
Bread,	1 slice		
Biscuit, roll, muffin	1 serving		
macaroni, noodles, rice, pasta, or cereal	1/2 cup		
Weekly total	8	No	
MILK		M T W T F	
Whole and unflavored low-fat, skim, or buttermilk offered	8 fl oz		
		TOTAL	

School Name:____________________

School Number:____________________ Week of:__________

Menu Analysis
USDA Lunch Menu Pattern - Group V

COMPONENT	STANDARD	OBSERVATION	COMPLIANCE SCORE
Meat/Meat Alternate		M T W T F	
Meat, poultry, fish	3 oz		
Cheese	3 oz		
Egg, Large	1 1/2		
Dry beans or peas	3/4 cup		
Peanut butter	6 Tbsp		
Vegetable/Fruit	3/4 cup	M T W T F	
Bread/Bread Alternate		M T W T F	
Bread,	1 slice		
Biscuit, roll, muffin	1 serving		
macaroni, noodles, rice, pasta, or cereal	1/2 cup		
Weekly total	10	No	
MILK		M T W T F	
Whole and unflavored low-fat, skim, or buttermilk offered	8 fl oz		
		TOTAL	

School Name:____________________ Meal: Breakfast / Lunch
School Number:____________________ Week of:____________

Menu Analysis
Dietary Guidelines for Americans

CRITERIA	OBSERVATION	COMPLIANCE SCORE
1. On no-choice menus, processed meats high in fat and/or sodium, are offered only once per week. (4)	M T W T F	
2. Dry beans or peas are offered at least once per week. (6)	M T W T F	
3. Fresh fruit or vegetable is offered each day. (3)	M T W T F	
4. Bread, bread alternate, or dessert containing whole grain is offered each day. (2)	M T W T F	
5. Unflavored skim or 1% low-fat is offered. (8)	Y N	
6. On no-choice menus, no more than one high-fat menu item is offered at each meal.(5)	M T W T F	
7. Salt shakers are available only on request. (7)	Y N	
8. Butter/margarine is available only on request. (7)	Y N	
9. % calories contributed by fat does not exceed 30%. (1)	M T W T F	
10. % calories contributed by saturated fat does not exceed 10%. (1)	M T W T F	
11. % calories contributed by refined sugar does not exceed 10%. (1)	M T W T F	
12. Sodium content does not exceed 1000 mg. (1)	M T W T F	
	TOTAL	

School Name:________________ Meal: Breakfast / Lunch

School Number:______________ Week of:________________

Site Visit Observation Checklist
Menu Items Planned versus Served

PLANNED		SERVED	
MENU ITEM	PORTION	SUBSTITUTION	PORTIO N
		Incidence Appropriate N Y N Y	+ = -
		Incidence Appropriate N Y N Y	+ = -
		Incidence Appropriate N Y N Y	+ = -
		Incidence Appropriate N Y N Y	+ = -
		Incidence Appropriate N Y N Y	+ = -
		Incidence Appropriate N Y N Y	+ = -
		Incidence Appropriate N Y N Y	+ = -

N = No substitution
Y = Substitution
+ = Portion greater than specified
= = Portion as specified
- = Portion less than specified

Observation of Practices

TYPE OF INGREDIENT	PRACTICE	COMMENTS
1. Reduced fat meat/meat alternates are purchased. (PR2)	Y N N/A	
2. Reduced sodium meat/meat alternates are purchased. (PR2)	Y N N/A	
3. Canned fish is packed in water instead of oil. (PR4)	Y N N/A	
4. Canned fruits are packed in light syrup or fruit juice. (PR5)	Y N N/A	
5. Fresh and/or frozen vegetables are substituted for canned. (PR9)	Y N N/A	
6. Oven ready fries are purchased instead of deep fat type. (PR7)	Y N N/A	
7. Breads, buns, and crackers contain at least 30% whole-grain flour. (PR10)	Y N N/A	
8. Ice milk, low/nonfat frozen yogurt or frozen fruit juice bars are purchased instead of ice cream. (PR6)	Y N N/A	
9. Reduced fat salad dressing and mayonnaise are purchased. (PR1)	Y N N/A	
10. Polyunsaturated and/or monounsaturated oils are used. (PR8)	Y N N/A	
11. Prepared items are processed with unsaturated vegetable oils. (PR12)	Y N N/A	
12. Seasoning powders are utilized instead of seasoning salts. (PR11)	Y N N/A	
13. Seasoning mixes do not contain MSG or salt as the primary ingredient. (PR11)	Y N N/A	
14. A majority of menu items are school-prepared. (MP8)	Y N N/A	

METHOD OF PREPARATION	PRACTICE	COMMENTS
15. Ground poultry (11% fat or less) is mixed in a 50/50 ratio with ground meat. (PR3)	Y N N/A	
16. Poultry skin is removed before or after cooking. (PS1)	Y N N/A	
17. Visible fat is trimmed from raw meat prior to cooking. (PS2)	Y N N/A	
18. Fat is drained from cooked meat during preparation. (PS2)	Y N N/A	
19. Breaded meats, poultry, and fish are oven baked instead of fried. (PS5)	Y N N/A	
20. Vegetables are cooked until crisp-tender only. (PS4)	Y N N/A	
21. Vegetables are held no longer than 20 minutes until service. (PS4)	Y N N/A	
22. Salt is not added to canned vegetables. (PS11)	Y N N/A	
23. Edible vegetable and fruit peels/skins are not removed. (PS13)	Y N N/A	
24. Recipes have been modified to incorporate at least 30% wheat flour in place of white flour. (PR10)	Y N N/A	
25. Recipes incorporate skim or nonfat dry milk instead of whole milk. (PS15)	Y N N/A	
26. Recipes incorporate plain yogurt or reduced fat mayonnaise instead of sour cream or mayonnaise. (PS16)	Y N N/A	
27. Recipes have been modified to reduce amount of total fat. (PS9)	Y N N/A	
28. Bacon grease, lard, and/or salt pork are not used. (PS9)	Y N N/A	
29. Non-stick spray is used instead of fat to saute and prevent sticking. (PS10)	Y N N/A	
30. Recipes have been modified to reduce amount of salt and sodium. (PS11)	Y N N/A	

SERVICE	PRACTICE	COMMENTS
31. Salt shakers are available only upon request. (CR7)	Y N N/A	
32. Butter/margarine is available only upon request. (CR7)	Y N N/A	
33. Low-fat condiments accompany fried foods instead of tartar sauce or other high fat sauces. (PS14)	Y N N/A	

CR = Criteria
MP = Menu Planning
PR = Procurement
PS = Preparation/Service

APPENDIX O

INSTRUMENT
DEVELOPED FOR
ADMINISTRATORS

- Questionnaire
- Key
- Demographics

Name:______________________________________
Last First

School Name:________________________________

AN ASSESSMENT OF NUTRITION EDUCATION & TRAINING NEEDS IN TEXAS

Administrators

Project Sponsored by
Texas NET Program
P.O. Box 149030
Austin, TX 78714-9030

Texas Tech University
MS 41162
Lubbock, TX 79409
FAX (806) 742-3042

NET

Dear Administrator:

YOU have been selected to take part in a very important research project. This project is sponsored by the Texas Department of Human Services.

Your cooperation and input are needed to respond to this questionnaire on nutrition education. The responses of participants across the state of Texas will help guide the direction for more effective nutrition education in the schools.

Please follow these guidelines in responding to the questions:

-read the directions to each section and every question carefully and respond; some of the sections have different directions and response patterns.

-after you have finished the questionnaire, check each page to be sure that you have answered all the questions.

-your answers to the questionnaire will be confidential; the results will be used for research purposes only.

THANK YOU for being a part of this special study!

DEMOGRAPHICS

Directions: Please respond to the following questions by circling the number in front of the appropriate response.

1. Your sex is:
   1. female
   2. male

2. Your ethnic background is:
   1. African-American
   2. American Indian or Alaskan Native
   3. Asian or Pacific Islander
   4. Hispanic
   5. White

3. Your age is:
   1. 20-25
   2. 26-30
   3. 31-35
   4. 36-40
   5. 41-45
   6. over 46

4. Your highest level of education completed is:
   1. Bachelor's degree
   2. Master's degree
   3. Master's degree plus additional hours
   4. Specialist's degree
   5. Doctoral degree

   other, please specify____

5. Your educational background in nutrition is:
   (CIRCLE YES OR NO FOR EACH RESPONSE)
   - studied nutrition in high school 1. Yes 2. No
   - studied nutrition in college as part of another course 1. Yes 2. No
   - completed college course(s) in nutrition 1. Yes 2. No
   - specify number of college credit hours in nutrition, if applicable ________

6. Years you have been employed as an administrator (include this year):
   1. less than five
   2. 5-10
   3. 11-20
   4. 21-30
   5. more than 30

7. Approximate number of students enrolled in your school:
   1. less than 250
   2. 251 - 500
   3. 501 - 750
   4. 751 - 1000
   5. over 1000

8. What percentage of students are bused in?
   1. 0 - 5 percent
   2. 6 - 15 percent
   3. 16 - 25 percent
   4. 26 - 35 percent
   5. more than 35 percent

9. Health-related problems which your students have:
(CIRCLE YES OR NO FOR EACH RESPONSE)

• allergy	1. Yes	2. No
• anemia	1. Yes	2. No
• anorexia nervosa	1. Yes	2. No
• asthma	1. Yes	2. No
• bulimia	1. Yes	2. No
• cancer	1. Yes	2. No
• dental	1. Yes	2. No
• diabetes	1. Yes	2. No
• overweight	1. Yes	2. No
• physically challenged	1. Yes	2. No
• pregnancy	1. Yes	2. No
• skin irritation	1. Yes	2. No
• underweight	1. Yes	2. No

other, please specify ____

10. During the last year, you have learned about food and nutrition from:
(CIRCLE YES OR NO FOR EACH RESPONSE)

• family members	1. Yes	2. No
• friends	1. Yes	2. No
• school cafeteria employee	1. Yes	2. No
• school nurse	1. Yes	2. No
• teachers	1. Yes	2. No

other, please specify ____

11. During the last year, you have learned about food and nutrition from:
(CIRCLE YES OR NO FOR EACH RESPONSE)

• books	1. Yes	2. No
• clubs (4-H, Scouts)	1. Yes	2. No
• magazines, newspapers	1. Yes	2. No
• t.v., radio	1. Yes	2. No

other, please specify ____

12. Would you like to know more about nutrition?
1. Yes 2. No

13. Would you like to know more about:
(CIRCLE YES OR NO FOR EACH RESPONSE)

• consumer skills	1. Yes	2. No
• dietary guidelines	1. Yes	2. No
• food preferences	1. Yes	2. No
• food safety/sanitation	1. Yes	2. No
• food traditions	1. Yes	2. No
• function of nutrients to maintain health	1. Yes	2. No
• healthy food choices	1. Yes	2. No
• nutrition and fitness	1. Yes	2. No
• nutritional needs	1. Yes	2. No
• self-responsible choices	1. Yes	2. No

other, please specify ________________________________

14. Would you like to know more about the relationship between nutrition and:
(CIRCLE YES OR NO FOR EACH RESPONSE)

• health	1. Yes	2. No
• physical fitness	1. Yes	2. No
• scholastic achievement	1. Yes	2. No

other, please specify ________________________________

15. If you were participating in nutrition education which type of training format would you prefer?
(CIRCLE ONLY ONE)
1. group discussion
2. inservice
3. lecture
4. panel discussion
5. video cassettes/media
6. workshop

other, please specify ____________________________

NUTRITION KNOWLEDGE

Directions: For each item draw a circle around the number of the best (most correct) answer.

1. Seriously undernourished children have:
1. larger heads and higher brain weights than well-nourished children
2. larger heads and lower brain weights than well-nourished children
3. smaller heads and higher brain weights than well-nourished children
4. smaller heads and lower brain weights than well-nourished children

2. Of the following statements about hunger and undernutrition, which one is true?
   1. hunger is reversible and may have permanent bad effects
   2. hunger is irreversible and may have permanent bad effects
   3. undernutrition requires treatment with possible permanent effects
   4. undernutrition has lengthy treatment with no permanent effects

3. When the body has adequate food, the brain undergoes a critical period of development and growth spurt during the following time period:
   1. birth to 2 years
   2. 2-5 years
   3. 3-6 years
   4. 6-9 years

4. A major benefit of FIBER is that it:
   1. does not cost very much
   2. helps prevent cancer
   3. helps prevent colds
   4. is found in all foods

5. When young adolescent boys eat breakfast their maximum output:
   1. decreases at first, then increases
   2. increases continuously
   3. remains the same
   4. increases at first, then decreases

6. Studies have revealed that students who eat a balanced breakfast had test scores:
   1. somewhat higher than those who ate the unbalanced breakfast
   2. significantly higher than those who ate the unbalanced breakfast
   3. somewhat lower than those who ate the unbalanced breakfast
   4. significantly lower than those who ate the unbalanced breakfast

7. Low mental development and low physical activity of children is largely due to:
   1. deficiency of vitamin E
   2. deficiency of iron
   3. lack of calcium
   4. low intake of vitamin C

8. Hungry school children exhibit:
   1. high attentiveness due to low blood sugar levels
   2. high diligence due to high blood sugar levels
   3. low performance due to high blood sugar levels
   4. low concentration due to low blood sugar levels

9. A nutrient-dense food is one that provides:
   1. few nutrients compared to calories
   2. many calories but few nutrients
   3. many calories but no nutrients
   4. many nutrients compared to calories

10. The long-term effects of eating too many foods high in SUGAR could be:
    1. diabetes mellitus
    2. high blood pressure
    3. megoblastic anemia
    4. obesity/heart disease

11. Maintaining ideal body weight can reduce the risk of:
    1. diabetes
    2. hepatitis
    3. mononucleosis
    4. tuberculosis

12. The Dietary Guidelines for Americans are primarily for:
    1. adolescents
    2. children
    3. healthy people
    4. people on diets

13. One of the most important factors in losing weight is:
    1. decreasing activities
    2. increasing exercise
    3. increasing protein foods
    4. skipping meals

14. Which of the following is a TRUE statement?
    1. a high-protein diet is necessary to build muscles
    2. grapefruit breaks down body fat
    3. milk is needed at all ages for calcium
    4. the color of eggs affects the nutritional value

NUTRITION ATTITUDE ASSESSMENT

Directions: Please CIRCLE the number that best describes how you feel about each of the following statements.

	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
1. It is hard to make nutritious food choices when eating away from home.	5	4	3	2	1
2. Good nutrition is important to a student's ability to learn.	5	4	3	2	1

	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
3. Snacks are an important part of a person's diet.	5	4	3	2	1
4. Exercise is an important factor in weight control.	5	4	3	2	1
5. I like to know about the nutrients we need in our daily diets.	5	4	3	2	1
6. The foods I eat now will affect my future health.	5	4	3	2	1
7. I would rather take a vitamin pill than think about what I eat.	5	4	3	2	1
8. I am not particularly interested in nutrition.	5	4	3	2	1
9. Breakfast is an important meal for good daily performance.	5	4	3	2	1
10. Having a school breakfast program is a waste of money.	5	4	3	2	1
11. Breakfast is the most important meal of the day.	5	4	3	2	1
12. It is important to know about the nutrients we need.	5	4	3	2	1
13. Diet is important in maintaining a healthy weight.	5	4	3	2	1
14. I like to read about how foods and wellness are related.	5	4	3	2	1
15. The nutrients we select have a major role in maintaining a healthy body.	5	4	3	2	1

	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
16. Too much emphasis is placed on the functions of nutrients in maintaining health.	5	4	3	2	1
17. We can choose our daily diets more effectively when we are aware of nutritional needs.	5	4	3	2	1
18. Nutrition information should be part of what children learn at school.	5	4	3	2	1
19. Nutrition education makes little difference in changing the eating behavior of people.	5	4	3	2	1
20. I like to keep up with new information on nutrition.	5	4	3	2	1

NUTRITION EDUCATION

Directions: Please respond to the following questions by circling the number in front of the appropriate response.

1. Is nutrition taught in any of the classes in your school?
   1. Yes   2. No

2. If nutrition is taught in your school, how?
   (CIRCLE YES OR NO FOR EACH RESPONSE)
   - as a separate course or subject   1. Yes   2. No
   - as part of the school lunch program   1. Yes   2. No
   - integrated in other subject matter (history, science, math, etc.)   1. Yes   2. No
   - do not teach nutrition   1. Yes   2. No

3. In which of the following subjects are nutrition concepts taught in your school?
(CIRCLE YES OR NO FOR EACH RESPONSE)

• health	1. Yes	2. No
• home economics	1. Yes	2. No
• math	1. Yes	2. No
• physical education	1. Yes	2. No
• science	1. Yes	2. No
• social studies	1. Yes	2. No

other, please specify ______________________________

4. The person that functions as the nutrition coordinator in my school is:
(CIRCLE YES OR NO FOR EACH RESPONSE)

• cafeteria manager	1. Yes	2. No
• food service director	1. Yes	2. No
• health teacher	1. Yes	2. No
• home economics teacher	1. Yes	2. No
• no one	1. Yes	2. No
• principal	1. Yes	2. No
• school nurse	1. Yes	2. No

other, please specify ______________________________

5. Key concepts taught in nutrition:
(CIRCLE YES OR NO FOR EACH RESPONSE)

• consumer skills	1. Yes	2. No
• dietary guidelines	1. Yes	2. No
• food preferences	1. Yes	2. No
• food safety/sanitation	1. Yes	2. No
• food traditions	1. Yes	2. No
• function of nutrients to maintain health	1. Yes	2. No
• healthy food choices	1. Yes	2. No
• nutrition and fitness	1. Yes	2. No
• nutritional needs	1. Yes	2. No
• self-responsible choices	1. Yes	2. No

other, please specify ______________________________

6. Resources used to help teachers in your school acquire nutrition knowledge are:
(CIRCLE YES OR NO FOR EACH RESPONSE)

• American Cancer Society	1. Yes	2. No
• American Dairy Council	1. Yes	2. No
• American Heart Association	1. Yes	2. No
• American Milk Producers Incorporated	1. Yes	2. No
• Cooperative Extension Service	1. Yes	2. No
• Inservice training	1. Yes	2. No
• NET resource materials	1. Yes	2. No
• NET workshops	1. Yes	2. No
• TEA workshops and materials	1. Yes	2. No
• textbooks	1. Yes	2. No

other, please specify ____

7. Nutrition education curriculum guides available in your school are:
(CIRCLE YES OR NO FOR EACH RESPONSE)

• Changing the Course (American Cancer Society)	1. Yes	2. No
• Education for Self-Responsibility IV Nutrition Education (TEA)	1. Yes	2. No
• guide developed for your school system	1. Yes	2. No
• Heart Smart (American Heart Association) Getting to Know Your Heart	1. Yes	2. No
• Project TEACH (Texas Education & Agriculture Cooperating for Health)	1. Yes	2. No

other, please specify ____

8. Does your school have a copy of the TEA Nutrition Education (Education for Self-Responsibility IV) curriculum guide? (published 1992)
1. Yes 2. No

9. Nutrition education should be offered at this level:
(CIRCLE ONLY ONE)
1. every grade level
2. K-6
3. 7-8
4. 9-12
5. no instruction should be offered

10. Resource persons most involved in teaching nutrition in your school are:
(CIRCLE THREE (3) RESPONSES ONLY)
01. cooperative extension home economist
02. dentist
03. dietitian
04. educational representative of association or trade agency
05. government commodity foods representative
06. classroom teachers
07. public health specialist
08. physician
09. school food service director
10. school food service manager
11. school nurse
12. university teacher

other, please specify____

11. In your opinion, the three most effective methods of teaching nutrition for all students are:
(CIRCLE THREE (3) RESPONSES ONLY)
01. activities in the cafeteria
02. computers
03. cooperative learning
04. demonstrations
05. discussions
06. field trips
07. food preparation by students
08. group work
09. lectures
10. magazines
11. media (film, video)
12. overhead transparencies
13. posters
14. reference books
15. resource person(s)
16. role playing and games
17. textbooks

other, please specify____

12. In your opinion, the three most effective methods of teaching nutrition to multicultural/minority students are:

(CIRCLE THREE (3) RESPONSES ONLY)

01. activities in the cafeteria
02. computers
03. cooperative learning
04. demonstrations
05. discussions
06. field trips
07. food preparation by students
08. group work
09. lectures
10. magazines
11. media (film, video)
12. overhead transparencies
13. posters
14. reference books
15. resource person(s)
16. role playing and games
17. textbooks

other, please specify____

13. Rank the following factors from "1" as most effective in teaching nutrition to "5" as least effective.

_____ aid and encouragement from school administrators
_____ aid and encouragement from school food service personnel
_____ current information on key nutrition issues
_____ inservice training for teachers
_____ nutrition education curriculum

14. The types of nutrition education inservice for teachers should be on:

(CIRCLE YES OR NO FOR EACH RESPONSE)

- curriculum development for specific grades 1. Yes 2. No
- development of teaching activities 1. Yes 2. No
- information on nutrition as a science 1. Yes 2. No
- nutrition content for specific grades 1. Yes 2. No
- teaching methods 1. Yes 2. No

other, please specify ____

15. Which factors inhibit teaching nutrition?

(CIRCLE YES OR NO FOR EACH RESPONSE)

- insufficient funds to support nutrition education 1. Yes 2. No
- lack of interest among school administrators & teachers 1. Yes 2. No
- lack of time to plan, coordinate, implement 1. Yes 2. No
- school calendars too full with academic activities 1. Yes 2. No
- shortage of education materials 1. Yes 2. No

other, please specify ____

16. Do teachers in your school use the following to teach nutrition?
(CIRCLE YES OR NO FOR EACH RESPONSE)

- audio-visual materials 1. Yes 2. No
- cafeteria 1. Yes 2. No
- commodities 1. Yes 2. No
- school feeding program 1. Yes 2. No
- school library 1. Yes 2. No

17. If school food service personnel are involved in nutrition at your school, how?
(CIRCLE YES OR NO FOR EACH RESPONSE)

- guest lectures or presentations 1. Yes 2. No
- kitchen tours 1. Yes 2. No
- nutrition education programs in the cafeteria 1. Yes 2. No
- tasting parties 1. Yes 2. No

other, please specify ______________________________

18. The types of nutrition education available in the cafeteria are:
(CIRCLE YES OR NO FOR EACH RESPONSE)

- display posters 1. Yes 2. No
- posted breakfast menu 1. Yes 2. No
- posted lunch menu 1. Yes 2. No
- public announcements 1. Yes 2. No
- talks on nutrition 1. Yes 2. No

other, please specify ______________________________

19. Do you find the cafeteria a cheerful and relaxing room for students to eat their school meals?

1. Yes 2. No

20. Please check all items with which you agree:

- Nutrition teachers should sponsor tasting parties in the classroom. 1. Yes 2. No
- I support tasting parties in the school cafeteria. 1. Yes 2. No
- Food service personnel should be invited to teach nutrition in the classroom. 1. Yes 2. No
- There is limited time for nutrition education in the school cafeteria. 1. Yes 2. No
- Teachers should participate in nutrition education in the cafeteria. 1. Yes 2. No
- Students should be encouraged to notice nutrition posters and materials in the cafeteria. 1. Yes 2. No
- Teachers seldom eat meals in the cafeteria. 1. Yes 2. No

21. Check each of the following food service operational activities that you provide:
(CIRCLE YES OR NO FOR EACH RESPONSE)

• budget	1. Yes	2. No
• cafeteria environment	1. Yes	2. No
• compliance	1. Yes	2. No
• food quality	1. Yes	2. No
• maintenance	1. Yes	2. No
• safety and sanitation	1. Yes	2. No
• scheduling	1. Yes	2. No
• special events	1. Yes	2. No
• staffing	1. Yes	2. No

other, please specify ______________________________

22. On the day-to-day food service operation, which ONE of the following describes the decision making structure?
(CIRCLE ONLY ONE)

1. I make all the decisions.
2. My food service director makes all the decisions.
3. My food service manager makes all the decisions.
4. I make most of the decisions.
5. My food service director makes most of the decisions.
6. My food service manager makes most of the decisions.
7. My food service director is equal with me in making decisions.
8. My food service manager is equal with me in making decisions.

other, please specify______________________________

This is the end of the Questionnaire
THANK YOU FOR PARTICIPATING!

Key for Questionnaire - Administrators

GOAL/Criteria	Question Number(Answer Number)
NUTRITION KNOWLEDGE	
●nutrition and health/fitness	4(2), 9(4), 10(4), 11(1), 12(3), 13(2), 14(3)
●nutrition and scholastic achievement	1(4), 2(3), 3(1), 5(2), 6(2), 7(2), 8(4)
NUTRITION ATTITUDE	
●healthy food choices	-1, +3, +11
●nutrition and health/fitness	+4, +6, +13
●self-responsibility for food selection	-7, -8
●nutrition and scholastic achievement	+2, +9, -10
●nutritional needs	+5, +12, +17
●functions of nutrients in maintaining health	+14, +15, -16
●nutritional education	+18, -19, +20

Demographic Results - Administrators[a]

CHARACTERISTICS	Frequency	%
Gender:		
• Female	22	50.0
• Male	22	50.0
Ethnicity:		
• African-American	3	6.8
• American Indian or Alaskan Native	0	0.0
• Asian or Pacific Islander	0	0.0
• Hispanic	4	9.1
• White	37	84.1
Age:		
• 20 - 25	0	0.0
• 26 - 30	1	2.3
• 31 - 35	2	4.5
• 36 - 40	7	15.9
• 41 - 45	14	31.8
• over 46	20	45.5
Educational Background in Nutrition:[b]		
• Never studied nutrition	15	34.1
• Studied nutrition in high school	15	34.1
• Studied nutrition in college as part of another course	15	34.1
Students have the following health related problems:[b]		
• Anemia	11	25.0
• Anorexia nervosa	6	13.6
• Bulimia	6	13.6
• Cancer	7	15.9
• Dental	39	88.6
• Diabetes	28	63.6
• Overweight	33	75.0
• Skin Irritation	28	63.6
• Underweight	25	56.8

[a] n = 44

[b] n = multiple responses allowed

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APPENDIX P

FORMS
FOR SECURING
REQUIRED APPROVALS

- Administrator
- Principal
- Teacher
- Parent
- Student Consent

Date

Dear Superintendent:

The Texas Nutrition Education and Training Program serves diverse target populations (children, educators, food service personnel, parents, and administrators in schools) having different cultural backgrounds and varied nutrition education and training needs. We have been funded to conduct a comprehensive assessment of the nutrition education and training needs of the target populations.

Measurements of the nutritional knowledge, attitudes, and practices of children, parents, educators, food service personnel and administrators as they relate to physical fitness and scholastic achievement will help determine the nutrition education and training needs of these populations and the inter-dependencies between these needs. The information collected can be used for curriculum development, teacher inservice education, and overall improvement of the existing nutrition education programs.

Administrators and teachers in selected schools will be asked to complete a questionnaire about nutrition education in the classroom and other related information. Food service personnel in these selected schools will be asked to complete a questionnaire about the food service operation and nutrition education in the school food service environment.

If we have your approval, we will contact principals of the schools selected in your district no later than November. Will you please sign the attached letter of permission and return it to us in the self-addressed, stamped envelope at your earliest convenience? Or, you can FAX your response to (806) 742-3042.

Your support of this project is crucial to the development and/or continuation of effective nutrition education programs throughout Texas. Your cooperation will be appreciated.

Sincerely,

Ruth Martin
Principal Investigator
Professor, ENR/HM

Enclosure: Envelope

ADMINISTRATIVE APPROVAL

I hereby give my approval for this school district to participate in the Texas Nutrition Education Training Needs Assessment. The research team, from the College of Human Sciences, Texas Tech University, has the authority to contact school principals and teachers for the collection of data.

Assessment instruments on nutrition knowledge, attitudes, and behaviors will be administered to students in Grades 3, 5, 8 and 11, their parents, teachers, administrators, and food service personnel. Individual research data will be kept confidential and only the results for the general population will be identified.

My school district is willing to participate in the study through the following:
(PLEASE CIRCLE)

WRITTEN QUESTIONNAIRE	Yes	No
OBSERVATION (Physical fitness and food service)	Yes	No

Questions may be addressed to Ruth Martin, Education Nutrition Restaurant Hotel Management, College of Human Sciences, Texas Tech University, Lubbock, Texas 79409-1162. The telephone number is (806) 742-3068; the FAX number is (806) 742-3042.

____
Signature of Superintendent Date

____
Printed Name of Superintendent

____
School District

____
Address

PLEASE MAIL IN THE STAMPED ADDRESSED ENVELOPE TO:

Ruth Martin, Ph.D.
NET Project
Texas Tech University
P. O. Box 41162
Lubbock, TX 79409-1162

Date

Dear Principal:

Your school has been selected to participate in a needs assessment for the project titled "Nutrition Education Training Needs in Texas". The objective of this study is to measure nutrition knowledge attitudes, and practices of children, parents, educators, food service personnel, and administrators as they relate to children's scholastic achievement, health, and physical fitness to determine the nutrition education and training needs of these populations and inter-dependencies between these needs.

This project is being conducted by a research team at Texas Tech University under the sponsorship of the Texas Special Nutrition Programs. The superintendent of your school district has given permission for us to conduct this field test in your school.

Please use the enclosed form to identify three teachers responsible for teaching nutrition concepts to their students in grades 3, 5, 8, 11. If no one teaches nutrition, please list three teachers willing to participate in the study. According to the field test, one class period of 45-50 minutes will be required to administer the test. The names of teachers can be FAXED to (806)-742-3042. We will call the teachers as soon as your response is received. Your cooperation is crucial for the success of this project!

After you have completed the enclosed questionnaire, please check to be sure that each item has a response and return it to us in the self-addressed stamped envelope within two weeks. Thank you for your help in improving nutrition education in Texas.

Sincerely,

Ruth Martin
Principal Investigator
Professor, ENR/HM

Enclosures:
Teacher Identification
Questionnaire
Envelope

Date

Dear Teacher

Your school has been selected to participate in the study "An Assessment of the Nutrition Education Training Needs in Texas," directed by personnel of the Department of Education Nutrition Restaurant Hotel Management of Texas Tech University. This project is funded by the Nutrition Education and Training program of the State of Texas.

Please read the instructions for completing the attached questionnaire. In addition, questionnaires and instructions for students will be sent to you. It will probably take about 50 minutes for the students to respond. The Student Consent Form needs to be given to the students to take home to their parents for signature and return. In addition, the questionnaire and Family Medical History need to be sent home with students for their parents' response. Your reminding the students to return the completed paper work within a week's period will greatly help.

We will call you to determine the best time/class periods of the day to give students the questionnaires. Or you can return the enclosed form to us within a week - (or FAX the information to us, (806) 742-3042). Thanks!

Sincerely,

Ruth Martin
Principal Investigator
Professor, ENR/HM

Enclosures: Questionnaire

Date

Dear Teacher:

Your school has been selected to participate in the study "An Assessment of the Nutrition Education Training Needs in Texas," directed by personnel of the Department of Education Nutrition Restaurant Hotel Management of Texas Tech University. This project is funded by the Nutrition Education and Training program of the State of Texas.

Please read the instructions for completing the attached questionnaire. In addition, questionnaires and instructions for students will be sent to you. It will probably take about 50 minutes for the students to respond. The Student Consent Form needs to be given to the students to take home to their parents for signature and return. In addition, the questionnaire and Family Medical History need to be sent home with students for their parents' response. Your reminding the students to return the completed paper work within a week's period will greatly help.

We will call you to determine the best time/class period of the day to give students the questionnaires. Or you can return the enclosed form to use within a week - (or FAX the information to use, 806-742-3042). Thanks!

Sincerely,

Ruth Martin
Principal Investigator
Professor, ENR/HM

Enclosures: Questionnaire

Directions: Please complete the information for your schedule: time of day and indicate your first, second, and third choices for the best class periods for administration of the nutrition assessment. Also include your name and school. Return in the enclosed envelope to:

Ruth Martin
NET Project
Texas Tech University
Box 41162
Lubbock, TX 79409-1162

Teacher's Name:____________________________

School Name:____________________

School Number:____________________

TEACHING SCHEDULE		
Period	Time of Day	Choice for testing (1, 2, 3)
1		
2		
3		
4		
5		
6		
7		

TEXAS TECH
UNIVERSITY

Education, Nutrition
and Restaurant/Hotel Management

Box 41162
Lubbock, TX 79409-1162
(806) 742-3068
FAX (806) 742-3042

November 19, 1993

Dear Parent/Guardian:

Nutrition can make a major difference in the total development of the child. The principal and teacher of your school have agreed to participate in a nutrition survey. You are needed to help with this work to benefit the people of Texas.

Your child has been selected to answer questions on food and nutrition. The person in your home who has the major responsibilities for buying and preparing food should be the one who answers the questionnaire. The Family Medical History and Student Consent Form need to be filled out as well as the booklet. Please send these back to the school as soon as possible. If you have questions, please call me at (806) 742-3068.

Thank you for your help! All of the information will be treated confidentially.

Sincerely,

Ruth Martin

Ruth E. Martin, Ph.D.
Principal Investigator

Enclosures: Student Consent Form
Family Information
Questionnaire
Return Envelope

An EEO/Affirmative Action Institution

STUDENT CONSENT FORM

I hereby give my consent for my participation in the project entitled: **Nutrition Education Training Needs in Texas.** The persons responsible for this project are: Dr. Ruth E. Martin and Dr. Linda C. Hoover (Texas Tech University Faculty), telephone number (806) 742-3068. The project has the following objectives: identify the nutrition education and training needs of students K-12, parents, teachers, administrators, and food service personnel.

I will be responding to instruments that measure knowledge, attitudes and practices of nutrition education. Scholastic achievement scores will be collected and physical fitness measures will be identified. Texas Tech University Health Sciences Center trained health professionals will take a finger stick blood test using individually packaged disposable instruments. Strict attention will be given to sanitary conditions. No charge will be made for this test and the results will be available to me.

I understand that all information which I give will remain confidential and only the total results from the whole study will be released. No personal information will be released by name to anyone. No payment will be made and I may withdraw from the study at any time.

The total duration of my participation will be one class period; only the NET Project, Texas Tech University and Texas Department of Human Services will have access to the records and/or data collected for this study; and that all data associated with this study will remain strictly confidential.

Dr. Martin has agreed to answer any inquiries I may have concerning the procedures and has informed me that I may contact the Texas Tech University Institutional Review Board for the Protection of Human Subjects by writing them in care of the Office of Research Services, Texas Tech University, Lubbock, Texas 79409, or by calling (806) 742-3884.

If this research project caused any physical injury to participants in this project, treatment is not necessarily available at Texas Tech University of the Student Health Center; insurance is carried by the University or its personnel applicable to cover any such injury. Further information about these matters may be obtained from Dr. Robert M. Sweazy, Vice Provost for Research, (806) 742-2884, Room 203 Holden Hall, Texas Tech University, Lubbock, Tx 79409-1035.

I give my permission for the following measures to be taken (all free of charge):

		YES	NO
Height	___	___	
Weight	___	___	
Approximate body fat	___	___	
Brief activity		___	___
Finger stick blood test	___	___	
Paper and pencil assessments	___	___	

Signature of Student:________________________ Student SS#:____-____-____

Signature of Parent/Guardian:________________________ Date:________________

Signature of Project Investigator:________________________ Date:________________

APPENDIX Q

PROCEDURES

- Observed Food Intake Research Protocol
- Observed Food Intake Program Coding Procedures
- Menu Analysis and Site Observation Research Protocol
- Menu Analysis Scoring and Program Coding Procedure
- Menu Analysis Site Observation Scoring and Program Coding Procedure
- Instructions for Physical Exam
- Physical Assessment Form

AN ASSESSMENT OF NUTRITION EDUCATION & TRAINING NEEDS IN TEXAS

Observed Food Intake
Research Protocol

Goal to be supported by protocol: The nutrition behavior of children is consistent with the nutritional goals of the Dietary Guidelines for Americans.

Purpose of protocol: To ensure that plate waste data from each school is collected and analyzed in a standardized fashion.

PROTOCOL

---

2 weeks prior to site visit	Review Menu Analysis Form and recipes. Enter menu item names and school information on the standard Weight Record and Observed Food Intake forms. If choices are available for any of the meal components, each of the choices should be listed. Print customized Observed Food Intake forms for pre-selected children.
During site visit	Verify menu items to be served on day of site visit. Determine standard weight in grams of each item by averaging the weight in grams of five servings. Record average weight of each menu item on Standard Weight Record form. Prior to meal time, distribute to each child selected for this component of the study an adhesive name tag with the child's subject number (social security number). Distribute a Observed Food Intake form to each pre-selected child who exits the cafeteria line.

APPENDIX Q

PROCEDURES

- Instrument Application
- Observed Food Intake Research Protocol
- Observed Food Intake Program Coding Procedures
- Menu Analysis and Site Observation Research Protocol
- Menu Analysis Scoring and Program Coding Procedure
- Menu Analysis Site Observation Scoring and Program Coding Procedure
- Instructions for Physical Exam
- Physical Assessment Form

PHYSICAL ASSESSMENT --- N.E.T. PROJECT

Student Name:______________________________ (Last) (First) (M.I.) School Name:______________ School I.D.:________

Social Security Number.____-___-____ Grade____ Birth Date:____ (Day) ______ (Month) _____ (Year)

Ethnic Group: African-American Mexican-American Asian/Pacific Islander American Indian/Alaskan White Other: __________

How many times a week does student exercise at least 20 minutes other than in physical education classes:__________ What exercise?____________ How long?___________

How many hours per day does student watch television?________________________

Weight: _______Lb. _______oz. (or ________kg.) Percentile:_______

Height: _______Ft. _______in. (or ________cm.) Percentile:_______

Run in place for one minute: Pulse before:_______/min.

Pulse at end:_______/min.

After 3 min.:_______/min.

Body type:

Very thin	Moderately Thin	"Normal"	Moderately Obese	Obese

Caliper: Triceps measure (1)_____(2)_____(3)_____ Percentile______

Subscapular measure (1)_____(2)_____(3)_____ Percentile_____

Hematocrit/Hemoglobin _______ mm/gm Not obtained _____
(Circle one)

Estimated reliability of student history:________________ Printed name of examiner:__________________________

Date of examination:________________ (Rev. 11/15/93)

	At the dining tables, circle the menu items which were chosen if choice is available and mark out the menu items which were not selected if offer versus serve is available on each child's Observed Food Intake form. Stick the child's name tag to the Observed Food Intake form. At the tray return/dishroom, collect the tray and Plate Waste Record for each child. Tape the Observed Food Intake form to the tray. Weigh each food item which remains on the child's tray with a calibrated, digital gram scale. Record the weights on the child's Observed Food Intake form.
Following site visit	Analyze data to determine consumption of individual menu items and by meal component.

AN ASSESSMENT OF NUTRITION EDUCATION & TRAINING NEEDS IN TEXAS

Observed Food Intake
Program Coding Procedures

1. To determine the weight in grams of the consumption of a food item by a student, the following formula should be utilized:

   Standard Weight (grams)

   - Weight of Waste (grams)

   Weight of Consumption (grams)

2. To determine the percent of consumption of a food item by a student, the following formula should be utilized:

$$\frac{\text{Weight of Consumption(grams)}}{\text{Standard Weight (Grams)}} \times 100$$

AN ASSESSMENT OF NUTRITION EDUCATION & TRAINING NEEDS IN TEXAS

Menu Analysis and Site Observations
Research Protocol

Goal to be supported by protocol: Food service personnel will plan, procure, prepare and serve nutritious, good tasting meals and snacks that meet the USDA Menu Patterns and the U.S. Dietary Guidelines for Americans.

Purpose of protocol: To ensure that menu data from each school are collected and analyzed in a standardized fashion.

PROTOCOL

4 weeks prior to site visit	Send a personalized letter requesting that the food service manager mail a copy of operational documents to the researchers at least 3 weeks prior to the site visit. * Breakfast and lunch menu for week of the site visit * Recipe, identifying source, for each menu item served during the week of the site visit or Project 2001 Menu Record form if recipes are not available * Indication of serving sizes for each menu item served during week of the site visit * Demographics of school food service operation
2 weeks prior to site visit	Call food service manager if materials have not been received by researchers.
1 weeks prior to site visit	Transfer information provided by the food service manager to the Menu Spreadsheet. Prepare list of issues which require clarification during site visit. Send a post card reminding food service manager of site visit.

During site visit	Clarify issues identified prior to visit and modify Menu Spreadsheet as deemed necessary. Observe operations to verify compliance with information provided to researchers. Record observations on Site Visit Observation Checklist. * Menu items served on day of site visit * Portion size for menu items served on day of site visit * Type of ingredients and preparation methods used for each menu item
Following site visit	Analyze data to determine compliance percentage scores. * Menu Analysis - USDA Menu Patterns and U.S. Dietary Guidelines for Americans * Site Visit Observation Checklist - Menu Items Planned versus Served and Operational Practices

AN ASSESSMENT OF NUTRITION EDUCATION & TRAINING NEEDS IN TEXAS

Menu Analysis
Scoring and Program Coding Procedure

Compliance with USDA Menu Pattern

Scoring Procedures

1. Using the Menu Spreadsheet form, evaluate the adequacy of the menu pattern for each day by comparing the menu with the pattern specified by USDA.

2. Circle the letter representing the week day(s) for which the menu is not in compliance with the pattern.

Program Coding Procedures

1. To compute the compliance score for a meal component, subtract 1 point for each day that the menu does not meet the pattern for that component.

2. Calculate the total points by subtracting the noncompliance points from 20 for breakfast and from 21 for lunch.

3. Determine the compliance percentage score by dividing the total points by 20 for breakfast and 21 for lunch and multiplying times 100.

Compliance with U.S. Dietary Guidelines for Americans

Scoring Procedures

1. For items 1-8, use the Menu Spreadsheet to evaluate the application of U.S. Dietary Guidelines to the menu planning component.

2. For items 9-12, determine the nutrient composition of the menus by means of the NutriKid Computer system.

3. Circle the letter representing the week day(s) for which the menu does not meet the criteria.

AN ASSESSMENT OF NUTRITION EDUCATION & TRAINING NEEDS IN TEXAS

Menu Analysis
Site Observation
Scoring and Program Coding Procedure

Compliance of Menu Items Planned versus Served

Scoring Procedures:

1. Compare the menu items and portion sizes which were specified on the written menu provided by the facility with the menu items and portions sizes which were observed. Circle "=" if the portion size was as specified; circle "+" if the serving size was greater than specified; circle "-" if the serving size was less than specified.

2. If a substitution was noted circle "Y", otherwise circle "N". Identify the substitution by writing the name of the new menu item under the menu item for which it was substituted.

3. For any substitution which was appropriate circle "Y", otherwise circle "N".

Program Coding Procedures:

1. Subtract 1 point for any substitution which was observed.

2. Subtract 1 point for any substitution which is not an equivalent meal component based on Food Buying Guide for Child Nutrition Programs.

3. Subtract 1 point for any item which did not meet the specified serving size.

4. Determine the maximum points which were possible based on the items served.

5. Calculate the total points by subtracting the noncompliance points from the maximum points.

6. Determine the compliance percentage score by dividing the total points by the maximum points and multiplying times 100.

Compliance of Practices

Scoring Procedures:

1. Compare the practices observed with the practices recommended by Project 2001.
2. If the practice met the requirements of 2001, circle "Y". If the practice did not meet the requirements, circle "N". If the practice was not observed, circle "N/A".

Program Coding Procedures:

1. Determine the maximum points which were possible by counting the number of items which received either "Y" or "N".
2. Tally the number of items which received "Y" as the total score.
3. Determine the compliance percentage score by dividing the total score by the maximum score and multiplying times 100.

Program Coding Procedures

1. To compute the compliance score for each criteria, subtract 1 point for each day that the menu does not meet the criteria.

2. Calculate the total points by subtracting the non compliance points from 48.

3. Determine the compliance percentage score by dividing the total points by 48 and multiplying times 100.

INSTRUCTIONS FOR EXAMINERS

General:

Check to be certain that child's name, social security number, birth date, ethnic group, grade level, and school name & I.D. number are on the History and/or Physical Exam form and that they are the same on both forms. Make certain that the permission for examination has been signed. If there is not signed permission, the examination cannot be done. It is desirable at all age groups that males and females be examined separately. If only one room is available, complete all male examinations and then perform female examinations.

History of Exercise:

Each student should be asked how many times a week s/he exercises over and above the required physical education requirements. Determine what type of exercise is done; how strenuous it is; and for what period of time is it done. For younger children through grade 6, "playing ball after school", etc. is an active form of exercise. The "reliability" of the student in relation to amount of exercise and to T.V. watching is a subjective determination and is entered at the bottom of the form.

Weight:

To be determined with minimal clothing and no shoes. Remove sweater or other outerware, heavy jewelry, and heavy objects from pockets. Females may wear skirt/slacks and blouse; males pants and shirt. Weight may be recorded in pounds/ounces or in kilograms to one decimal place. It will not be necessary to determine percentiles for either height or weight.

Height:

While recumbent height is more accurate in children under six years, all height measurements for this study will be recorded as standing height. The child is instructed to stand erect without shoes and with heels, buttocks, upper part of the back, and back of head placed against a vertical upright measuring device. The heels should be close together and the arms should hang naturally at the sides. The external auditory meatus and the lower border of the occiput should be in a plane parallel to the floor. A wooden headpiece with two faces at right angles may be placed firmly on the head against a 2-meter or 7-foot measuring scale attached to a wall (without baseboard) against which the child is positioned. Hair bows should be removed and compensation made as closely as possibly for hair arrangements which are stiffly vertical. Height may be recorded in feet/inches or in centimeters. As noted above, it will not be necessary to determine percentiles.

NOTE: If it is necessary to use a weight scale with sliding bar to measure height, then read the height before the student steps off the scale, as the scale will tend to slide down. If the examiner is shorter than the student, Use a small footstool if necessary to read the top of the scale.

Exercise Pulse:

Just prior to exercise, the radial pulse should be obtained and recorded. The pulse may be counted for 30 seconds and multiplied by 2 to determine pulse/minute. The student is then asked to run in place for one minute as timed by a watch with a second hand or by a stop watch. The student should be encouraged to run at his/her maximum rate. If the student does not cooperate well, a note to that effect should be entered by this category on the form. At the end of one minute of running, the pulse is counted again, and is re-counted three minutes after the 1-minute pulse. Ideally, the exercise pulse should be done in a separate room from the other measures as privacy enhances the ability of the student to concentrate on running without feeling quite so conspicuous.

Body type:

Variations in body forms of normal persons may be expressed by differences in physique. There are three basic physique types: ectomorphic, mesomorphic, and endomorphic. (See attached figures for comparison). The ectomorph is characterized by relative linearity, light bone structure, and small mass with respect to body length. The extreme of this is labeled "Very Thin" on the exam sheet. At the other end of the scale, the endomorph is characterized by a relatively stocky build with large amounts of soft tissue. The extreme at this end of the scale is "Obese". The physique of the mesomorph is between the two extremes and is often relatively muscular in young persons. Simply place an "X" at the appropriate spot along the continuum.

Caliper Measurements:

Measurement of skin fold thickness (SFT) provides a rough estimate of body composition. Triceps SFT is measured over the posterior surface of the triceps of the left arm by calipers placed at a point halfway between the acromion and the olecranon as the arm hangs vertically in a relaxed fashion at the patient's side. (SEE ATTACHED DIAGRAMS). Make a ball-point pen mark at the mid-point so that the measurements for a given subject are done at the same site. Subscapular SFT is measured below the angle of the left scapula (The shirt or blouse may be simply pulled up to expose the base of the left scapula). With either measure, the skin fold in gently pinched out and calipers applied. (SEE ATTACHED ILLUSTRATIONS). For each measurement, gently tug fat away from underlying muscle so that muscle is not pinched in the caliper measure. Two seconds are allowed for equilibration (Count 1001-1001-and then read the caliper). Each measurement is done three times. Allow approximately one minute between readings. Enter each caliper measurement on the exam form. Percentage fat does not have to be determined by the examiner.

Hematocrit Measurement:

The middle finger of left hand (for right handed students) or right hand (for left handed students) is grasped in the examiners hand and the ball of the finger is scrubbed briefly but firmly with an alcohol swab. A dry gauze swab is then used to dry to finger and is held nearby for later use. The finger is squeezed from its proximal end and a quick jab is made into the ball with a sterile stylette which is opened just before use and is tossed into a plastic receptacle as soon as it has been used. The finger then is squeezed to produce a rather large drop of blood which is gathered by capillary action into a capillary tube held at a 45 degree angle to the finger. The tube has an indicator of the height to which the blood is drawn. The tube is then placed gently into a wax-bottomed holder which seals the tube. The excess blood on the finger is wiped off; finger is checked to see that bleeding has stopped; small bandaid is applied to finger.

It is required that persons performing hematocrit or hemoglobin measures wear disposable rubber gloves to protect themselves from contact with students' blood.

Anthropometric measurement, frequently the first step in nutritional assessment, is relatively easy to perform. However, a recent study conducted by the Center for Disease Control[1] at public health clinics in various states revealed that a significant proportion of anthropometric measurements incorporate serious errors due to inaccurate instruments, poor technique, incorrect readings, or inaccurate recording.

To assure measurement accuracy and reliability, careful attention must be paid to correct technique. For this reason, a checklist of steps is useful for reviewing anthropometric techniques or for training personnel. The following instructions should facilitate obtaining accurate and reliable weight, height, mid-upper-arm circumference, and triceps skinfold measurements, and estimates of mid-upper-arm muscle circumference.

WEIGHT

Body weight should be measured with beam scales with nondetachable weights. Scales for use with older children and adults should permit reading to the nearest 20 grams. Scales should be calibrated at 3- to 4-month intervals.

1. Examiner should be familiar with use of instrument.
2. Scale should be calibrated to zero.
3. Patient should be weighed before breakfast, after bladder has been emptied.
4. Patient should be dressed in light clothing, without shoes.
5. Patient should stand on scale or lay quietly on a weighing table.
6. Measurement should be noted and recorded accurately.
7. Present measurement should be compared with previous weight measurement(s) to determine possible weight change.
8. Reference data should be used to assist interpretation.

HEIGHT

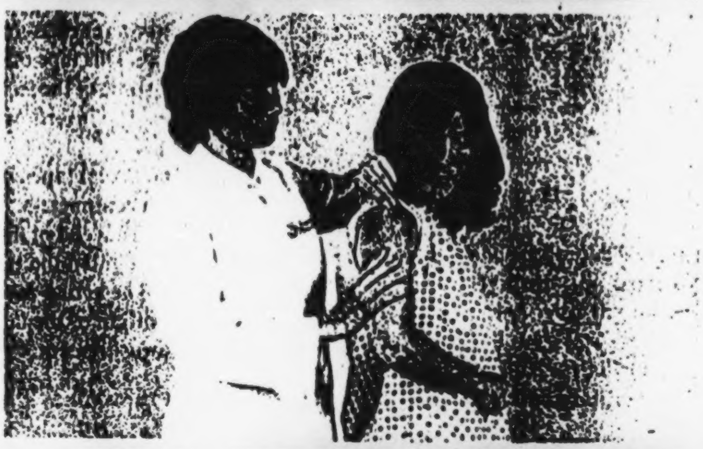
Platform scales with movable measuring rods should not be used for measuring height. Satisfactory equipment consists of a measuring stick or tape affixed to a true vertical flat surface, such as a wall, or a rigid free-standing measuring device and a movable block squared at right angles to the vertical surface, which is to be brought down to the crown of the head.

1. Examiner should be familiar with use of equipment.
2. Patient should be without shoes or hat.
3. Patient should stand on bare floor or platform with heels together, back as straight as possible; the heels, buttocks, shoulders, and head should touch wall or vertical surface of the measuring device.
4. Patient's line of sight should be horizontal.
5. Measurement should be noted and recorded accurately.
6. Present measurement should be compared with previous height measurement(s) to determine increase in height for patients who may still be growing, or to help identify measurement errors.
7. Reference data should be used to assist interpretation.

PROCEDURE

Location of the upper arm midpoint:

1. Instruct the patient to stand erect, bend the right arm at a 90° angle from the elbow and make a fist.



2. Locate the tip of the olecranon process of the ulna and the acromial process of the scapula by palpation and mark these sites with adhesive labels while palpating (Fig. 13).

3. Place the zero inch mark of the insertion tape against the marked tip of the acromial process and run the tape down the posterior side of the upper arm to the marked tip of the olecranon process.

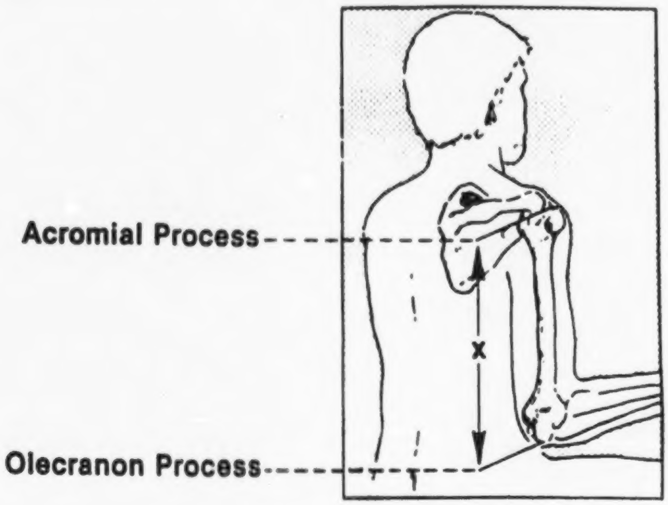


Figure 13. Identification of upper arm midpoint. The midpoint of the upper arm is located midway between the tip of the olecranon process of the ulna and the acromial process of the scapula.

4. Loop the tape in half, joining the two measured ends at the tip of the acromial process. Mark the midpoint at the end of the loop directly *in line* with the olecranon process using an adhesive label.

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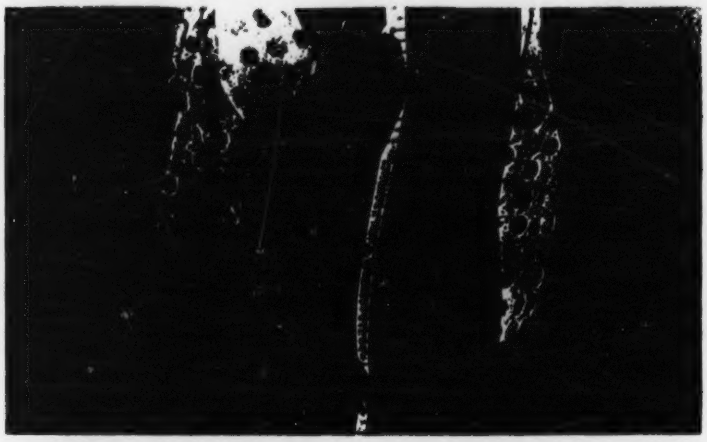
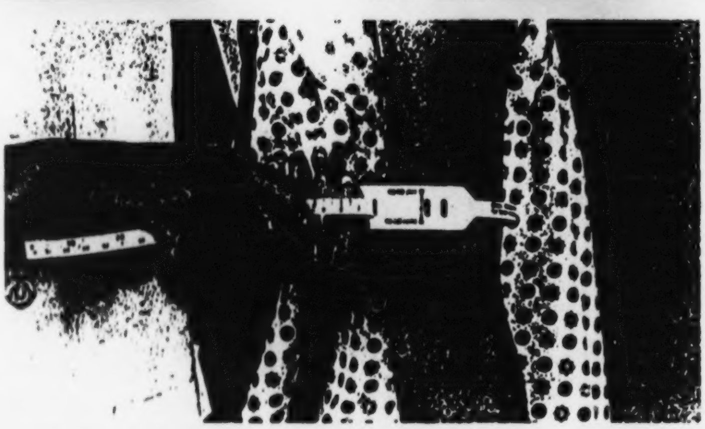


5. When using the Inser-tape*, adjust the tape vertically along the posterior aspect of the upper arm until the same number appears at the marked acromial and olecranon processes. "Zero" is the midpoint.

Measurement of mid-upper arm circumference:

1. Measure the right arm as it hangs freely.



2. Thread the distal end of the insertion tape through the slot in the proximal end.

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* Inser-tape®, Ross Laboratories, Columbus, Ohio.

BEST COPY AVAILABLE

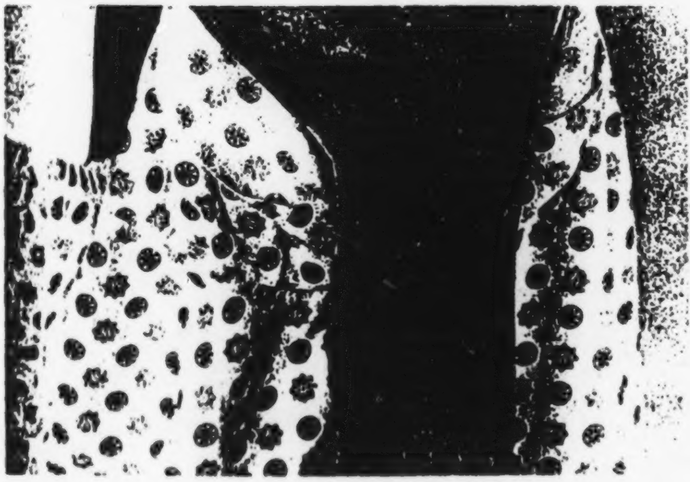
3. Align the upper edge of the tape with the midpoint mark.

4. Tighten the tape until it is in contact with the skin without constricting it. Read the arm circumference through the window at the origin of the tape to the nearest 0.1 cm.

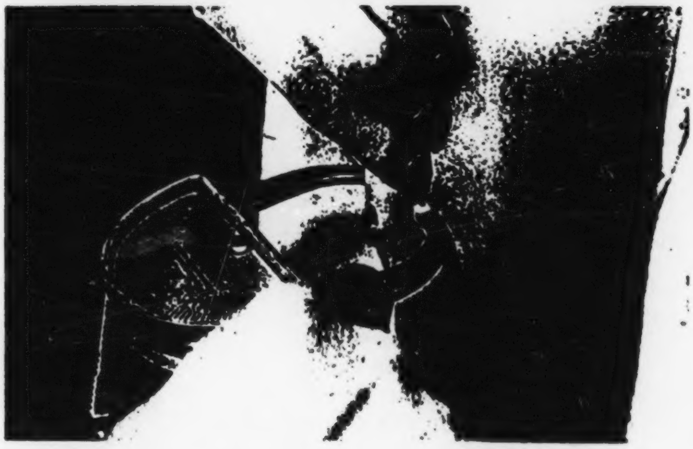
5. Record the measurement.

Measurement of triceps skinfold:

1. Measure the right arm as it hangs freely at the side. Pick up a lengthwise, vertical, double-fold of skin and fat about 1 cm above the midpoint mark, between the thumb and the forefinger of the left hand. The skinfold should be directly in line with the point of the olecranon process. Pull the fold cleanly away from the underlying muscle. Have the subject contract and relax the triceps muscle to ensure than no muscle is included in the fold. Hold the fold firmly and do not release it until the measurement has been read.



2. Pick up the calipers with the right hand and depress the spring loaded lever. Apply the caliper jaws over the fat fold exactly at the midpoint of the arm at a depth about equal to the thickness of the fold. Place the caliper jaws on the fold below the fingers so that pressure is exerted by the calipers and not the fingers.



3. Release the spring loaded lever while holding the fold. Read measurement approximately two seconds after full pressure is applied to the skinfold. Depress the spring loaded lever and remove calipers.

4. Repeat steps 1-4 two more times and record all measurements. Average the three skinfold measurements and record the average on the Nutritional Assessment Data Card or Record (Figs. 1 and 4).

SUPPLIES NEEDED FOR PHYSICAL ASSESSMENTS:

Scale for weight

Height measurement per sliding bar on scale or marker on wall (I have only one accurate hanging "portable" model, which is quite heavy)

Small stool on which to stand to see top of head measurement

Adipometer (Ross plastic caliper) per group (I have 6)

Ross Inser-tape per group (I have access to 4 per Dr. Fox)

Watch with second hand or stop watch (I have 1 stop watch)

For hematocrits:
- Alcohol swabs
- Sterile stylettes
- Heavy plastic container with lid to dispose of stylettes
- Capillary tubes
- Laboratory stand with wax in which to stand capillaries
- Small self-stick tabs to label tubes
- Portable micro-hematocrit centrifuge for sites other than Lbb.
- Sterile dry gauze pads
- Bandaids
- Disposable rubber/plastic gloves
- Ammonia ampules (6-8/team)

Ideally there should be a few disposable short gowns if an adolescent female has to remove blouse or sweater.

TRICEPS SKINFOLD PERCENTILES*

(Triceps skinfold measurements based on data obtained using Lange skinfold calipers on white subjects included in the Ten-State Nutrition Survey, 1968-1970.)

Interpretation

Skinfold measurements between the 15th and 85th percentiles are probably within normal limits for age and sex. Those greater than the 95th percentile may be considered representative of obesity, particularly when weight for length or stature also exceeds the 95th percentile.

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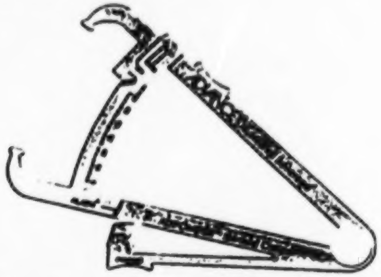
[*] Frisancho AR: Triceps skinfold and upper arm muscle size norms for assessment of nutritional status. *Am J Clin Nutr* 27:1052-1058, 1974.

The Adipometer™ skinfold caliper is scientifically designed to provide accurate measurements with relative ease.
The handy size of the Adipometer permits convenient storage, and it may be carried in a shirt or coat pocket.



The Adipometer™ skinfold caliper is provided as a service of Ross Laboratories, the makers of Advance® Nutritional Beverage.

AGE (years)	MALES					FEMALES				
	PERCENTILES(mm)					PERCENTILES(mm)				
	5th	15th	50th	85th	95th	5th	15th	50th	85th	95th
Birth-	4	5	8	12	15	4	5	8	12	13
0.5-	5	7	9	13	15	6	7	9	12	15
1.5-	5	7	10	13	14	6	7	10	13	15
2.5-	6	7	9	12	14	6	7	10	12	14
3.5-	5	6	9	12	14	5	7	10	12	14
4.5-	5	6	8	12	16	6	7	10	13	16
5.5-	5	6	8	11	15	6	7	10	12	15
6.5-	4	6	8	11	14	6	7	10	13	17
7.5-	5	6	8	12	17	6	7	10	15	19
8.5-	5	6	9	14	19	6	7	11	17	24
9.5-	5	6	10	16	22	6	8	12	19	24
10.5-	6	7	10	17	25	7	8	12	20	29
11.5-	5	7	11	19	26	6	9	13	20	25
12.5-	5	6	10	18	25	7	9	14	23	30
13.5-	5	6	10	17	22	8	10	15	22	28
14.5-	4	6	9	19	26	8	11	16	24	30
15.5-	4	5	9	20	27	8	10	15	23	27
16.5-	4	5	8	14	20	9	12	16	26	31
17.5-24.4	4	5	10	18	25	9	12	17	25	31

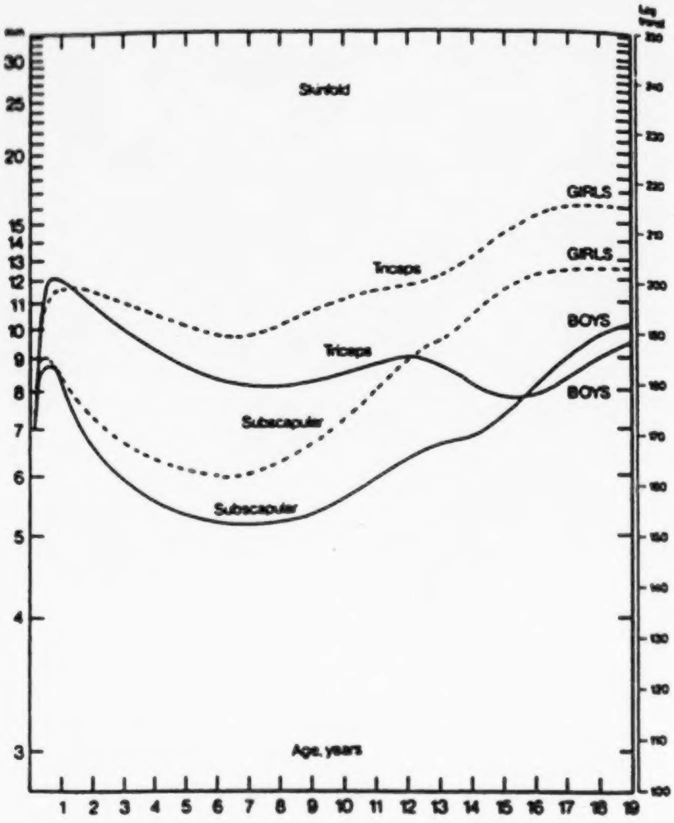


Figure 3–10. Skinfold thickness by age and sex, as mea ured by Harpenden skinfold calipers over triceps and unc scapula. Scale is in millimeters on the left side and logari mic transformation units on the right side. The lines sho are the 50th percentiles for British children. (Reprinted permission from Tanner JM: Fetus into Man: Physical Grov from Conception to Maturity. Cambridge, MA, Harvard U versity Press, 1978.) The data generating these curves those of Tanner and Whitehouse (1975).

supply of thyroid hormone. Resistance to dental caries is increased when the diet contains optimal amounts of fluoride.

SPECIAL FEATURES OF GROWTH IN THE RESPIRATORY TRACT

The status of the sinuses in the newborn infant is described in Sec. 3.3. The sphenoidal sinuses appear by about the age of 3 yr, and the frontal sinuses between 3 and 7 yr of age. Figure 3–11 shows the changes in respiratory rate that occur with age, with 10th and 90th percentile lines, and also shows how the rates differ for boys and girls and the distinctive changes occurring at adolescence (see also Sec. 12.1–12.3).

SPECIAL FEATURES OF GROWTH IN THE CARDIOVASCULAR SYSTEM

The heart is relatively large at birth, and there is a pubertal growth spurt in heart size that parallels the general growth spurt. As a result, different standards for radiologic interpretation of cardiac diameter in adolescents may be necessary. Figure 3–12 shows how the pulse rate varies with age, and Figures 15–1 to 15–6 show the changes in blood pressure with age. The mean systolic pressure for boys continues to advance with age after that of girls has begun to reach an asymptote. The levels of serum urate increase and those of high-density lipoprotein (HDL) cholesterol decrease with advancing age in male adolescents (see Sec. 8.20).

SPECIAL ASPECTS OF METABOLISM AND NUTRITION

Caloric needs increase with growth in size but maintain a relatively constant relationship to body surface area, which appears to be as closely correlated with the body's mass metabolically active tissue as any other simple measureme Measurements of body surface that correspond to giv heights and weights are available; estimates can be obtair from nomograms (see Chapter 27). Crude estimates for cl dren of average physique are given by the simple formu shown in Table 3–11.

When referred to body surface, basal caloric needs app to be somewhat lower in premature infants than in full-te ones. They increase during the 1st yr of life from about kcal/m²/hr to about 50 kcal by the 2nd yr, with a subsequ fall to adult levels of 35–40 kcal/m²/hr. The rate of fal slowed or may be reversed during the prepubertal or ado cent years by the need for additional energy to support increase in growth rate that occurs at this time. This increa need for calories is matched by an increased need for ot nutritional factors, including iron for both sexes (for musc development in males and to replace menstrual blood los postmenarchal females).

Needs for water and electrolytes remain roughly cons in relation to body surface area through most of the grow period; the inevitable variations in intake are met by capacity of homeostatic mechanisms to adjust to var conditions of supply and demand.

Adolescent growth is particularly susceptible to impairn by dietary fads or by behaviors that deprive the youngst essential calories or other nutritional substances. Drugs may impair adolescent growth; among these are certain o stimulants given for attention deficit disorders or lear disabilities (methylphenidate or dextroamphetamines).

A variety of metabolic changes in adolescence are refle in changes in normal values for levels of serum compon Alkaline phosphatase activity increases during the perio

APPENDIX R

TEAM TRAINING FOR DATA COLLECTION

DATA COLLECTION TRAINING AGENDA

INTRODUCTION OF NET RESEARCH TEAM MEMBERS

ORIENTATION TO NET RESEARCH PROJECT

DATA COLLECTION

PROCEDURES FOR DATA COLLECTION:
- Nutrition knowledge, attitudes, practices
- Scholastic achievement scores
- Physical fitness
- Food service operation and observed intake

TRAVEL GUIDELINES
- Schedule of site visits
- Ground travel
- Plane travel
- Lodging

NET TRAINING SESSION

PURPOSE:

The purpose of the NET training session was to train members of the team to collect data on site from the target populations(s) at the randomly selected schools. (The data are needed to help determine the nutrition knowledge, attitudes, and practices of the target populations (children in grades 3, 5, 8, 11; their educators/teachers, food service personnel, and administrators) to determine the need for nutrition education and the relationship between the variables and physical fitness and scholastic achievement). A secondary purpose was to have control over the data collection tasks to promote standardization in this phase of the project. Specifically, the objectives were to:

(1) identify the procedures for collecting the data from the school sites including:
  a) instruments from students (Grades 3, 5, 8, 11);
  b) instruments from parents of students;
  c) instruments from educators/teachers;
  d) instruments from administrator(s);
  e) instruments from food service personnel;
  f) parental permission slips; and
  g) assessment of children (with parental approval for physical fitness, scholastic achievement and food intake).

ON SITE VISIT:

Instrument data collection team member: *

(1) Check into the administrator's office upon arrival. Request completed NET instruments for the appropriate target population (Elementary: Grades 3, 5; Middle/junior high school: Grade 8; and High School: Grade 11). Request information on name and location of participating educator/teacher. Request information on location of scholastic achievement scores of children.

(2) Assist the food service team member with observation of food intake (plate waste).

(3) Contact educator/teacher for a list of names of students with parental permission.

(4) Contact the school nurse for services in assessing physical fitness (school nurses have been contacted). Follow through on mailing the hematocrit samples each day to the Lubbock laboratory for analysis.

(5) Use list of approved students to record available scholastic achievement scores (from administrative office or counseling office).

(6) use list of approved students to "track" them in cafeteria for nutrition practices

(observed food intake).

*Arrival at school: prior to breakfast and/or prior to lunch to accommodate the assessment of plate waste and food service operation.

To promote completeness of the site visit, a check list, in this Appendix, was developed for team members to review prior to leaving the school

FOOD SERVICE COMPONENT

MENU ANALYSIS AND SITE OBSERVATIONS:

Food Service Data Coder: refer to steps on Menu Analysis and Site Observations Research Protocol.

Food Service Data collection Team Member:

(1) Observation of Practices - Record observations in the dry storeroom, refrigerator, freezer, preparation areas, and waste disposal areas. Follow Compliance of Practices Scoring Procedures and Project 2001 (Criteria pg. 10-12, Menu Planning pg. 13, Procurement pg. 14, and Preparation/Service pg. 15-16.) Provide notes when a determination cannot be made. Example: 3 cans of tuna packed in oil and 6 cans of tuna packed in water.

(2) Menu Items Planned vs. Served - Prior to meal service, purchase five trays from the school food service operation. Follow Compliance of Menu Items Planned vs. Served. Measure using same method specified on the data collection form.

OBSERVED FOOD INTAKE DATA:

Food Service Data coder: refer to steps on Observed Food Intake Research Protocol.

Intake Research Protocol.

Data Collection Team Members:

(1) Revision of Forms - compare Menu Spreadsheet to data collection forms. Make revisions as necessary to the Standard Weight Record and Observed Food Intake Form.

(2) Determine Standard Weights - Follow Observed Food Intake Research Protocol.

DRESS CODE:

(1) Hairnet or cap
(2) Apron
(3) Gloves
(4) Non-skid, leather, closed toe shoes

(5) Coat (for observations in walk-in refrigerator or freezer)

MISCELLANEOUS:

(1) Do not interfere with the food service operation.
(2) Finish data collection prior to the closing of the food service operation.
(3) Display courtesy.
(4) When in doubt, call in for advice or a decision.

SCHEDULE/MANAGEMENT:

All of the needed materials have been packaged and labeled for each site. (If any of the questionnaires were not used, bring them back for future use).

Check into the main office upon arrival and also when departing. Introduce yourself and the purpose for the visit. Express appreciation for the cooperation and participation of the school.

For a breakfast site visit, arrival time should be no later than 7:00 a.m.; for lunch, arrive no later than 10:30 a.m.

Return all data to the NET Office on the TTU campus when you return from the school(s). Make notes about any information the principal investigator or coordinator need to know.

TRAVEL GUIDELINES:

Schedule of Site Visits

The site visits, lodging (if needed) air and ground travel will be coordinated through the NET Office. The random selection of sites to visit was made by the project statistician. Those schools who responded positively to the invitation to participate will be considered for site visits.

Schools will also be scheduled in accordance with geographic locations. Contacts will be made with the school administrators; site visits will be scheduled in a time frame which will accommodate the sending and completion of questionnaires, parental involvement, and considerations for food service personnel.

Ground travel will be used for those schools within reasonable driving distance in west Texas. For other schools throughout the state, air travel will be arranged, taking into consideration economical fares. Lodging arrangements will be scheduled with adherence to the state allowance and proximity to the selected school site agenda.

Each team will receive a schedule of school sites, lodging, and travel information. Contacts will be made if any modifications to the schedule are needed.

SITE VISIT CHECK LIST

School Name:____________________ School District:________________ Date:_________

The following items **must** be recorded/gathered before leaving from the school site visit:

FOOD SERVICE:

______ 1) Breakfast/Lunch menu for the month of visit

______ 2) Recipes for current week's menu

______ 3) Production Sheets for current week's menu

______ 4) Percentages for Free/Reduced and Full priced participants

______ 5) Source of recipes ______________________________

Yes No 6) Does district participate in Offer vs. Serve?

______ 7) Grade levels at this school are: **K, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12**

Yes No 8) Is more than 1 menu used at the district (1 for elem, 1 for H.S.)?

9) Meal at **elementary level** evaluated **before / after** P.E./recess?

Yes No 10) Are menus computer generated?

Yes No 11) Are cycle menus used?

12) Cycle menu is rotated every __________________

QUESTIONNAIRES and DATA:

____ Student questionnaires with **first and last name** on each!!!
____ Any unused questionnaires
____ Parents questionnaires
____ Consent form for each student
____ Family medical history
____ Teachers (Educators) questionnaires
____ Administrators (Principal) questionnaires
____ Food Service Manager and Worker questionnaires
____ Scholastic Achievement Scores(from Principal's Office or Counselor's Office)

STUDENT PHYSICAL FITNESS

____ Physical Assessment with **FIRST and LAST NAME** of student.

School Name: Hoover Elementary **Meal:** Lunch

School Number: 123-456-7890 **Date:** 11-9-93

Site Visit Observation Checklist
Menu Items Planned vs. Served

PLANNED		SERVED	
MENU ITEM	PORTION	SUBSTITUTION	PORTION
Weiner*	2 oz.	Incidence Appropriate N Y N Y	+ = -
Green Beans	1/4 Cup	Incidence Appropriate N Y N Y	+ = -
Slice Peaches	1/2 Cup	Incidence Appropriate N Y N Y	+ = -
Corn Dog Cover*	1 each	Incidence Appropriate N Y N Y	+ = -
Milk Whole 2% Skim Choc	8 fl. oz.	Incidence Appropriate N Y N Y	+ = -
		Incidence Appropriate N Y N Y	+ = -
		Incidence Appropriate N Y N Y	+ = -
		Incidence Appropriate N Y N Y	+ = -

* Corn Dog
N = No substitution
Y = Substitution
+ = Portion greater than specified
= = Portion as specified
- = Portion less than specified

Observation of Practices

TYPE OF INGREDIENT	PRACTICE	COMMENTS
1. Reduced fat meat/meat alternates are purchased. (PR2)	Y N N/A	
2. Reduced sodium meat/meat alternates are purchased. (PR2)	Y N N/A	
3. Canned fish is packed in water instead of oil. (PR4)	Y N N/A	
4. Canned fruits are packed in light syrup or fruit juice. (PR5)	Y N N/A	
5. Fresh and/or frozen vegetables are substituted for canned. (PR9)	Y N N/A	
6. Oven ready fries are purchased instead of deep fat type. (PR7)	Y N N/A	
7. Breads, buns, and crackers contain at least 30% whole-grain flour. (PR10)	Y N N/A	
8. Ice milk, low/nonfat frozen yogurt or frozen fruit juice bars are purchased instead of ice cream. (PR6)	Y N N/A	
9. Reduced fat salad dressings and mayonnaise are purchased. (PR1)	Y N N/A	
10. Polyunsaturated and/or monounsaturated oils are used. (PR8)	Y N N/A	
11. Prepared items are processed with unsaturated vegetable oils. (PR12)	Y N N/A	
12. Seasoning powders are utilized instead of seasoning salts. (PR11)	Y N N/A	
13. Seasoning mixes do not contain MSG or salt as the primary ingredient. (PR11)	Y N N/A	
14. A majority of menu items are school-prepared. (MP8)	Y N N/A	

METHOD OF PREPARATION	PRACTICE	COMMENTS
15. Ground poultry (11% fat or less) is mixed in a 50/50 ratio with ground meat. (PR3)	Y N N/A	
16. Poultry skin is removed before or after cooking. (PS1)	Y N N/A	
17. Visible fat is trimmed from raw meat prior to cooking. (PS2)	Y N N/A	
18. Fat is drained from cooked meat during preparation. (PS2)	Y N N/A	
19. Breaded meats, poultry, and fish are oven baked instead of fried. (PS5)	Y N N/A	
20. Vegetables are cooked until crisp-tender only. (PS4)	Y N N/A	
21. Vegetables are held no longer than 20 minutes until service. (PS4)	Y N N/A	
22. Salt is not added to canned vegetables. (PS11)	Y N N/A	
23. Edible vegetable and fruit peels/ skins are not removed. (PS13)	Y N N/A	
24. Recipes have been modified to incorporate at least 30% wheat flour in place of white flour. (PR10)	Y N N/A	
25. Recipes incorporate skim or nonfat dry milk instead of whole milk. (PS15)	Y N N/A	
26. Recipes incorporate plain yogurt or reduced fat mayonnaise instead of sour cream or mayonnaise. (PS16)	Y N N/A	
27. Recipes have been modified to reduce amount of total fat. (PS9)	Y N N/A	
28. Bacon grease, lard, and/or salt pork are not used. (PS9)	Y N N/A	
29. Non-stick spray is used instead of fat to saute and prevent sticking. (PS10)	Y N N/A	
30. Recipes have been modified to reduce amount of salt and sodium. (PS11)	Y N N/A	

SERVICE	PRACTICE	COMMENTS
31. Salt shakers are available only upon request. (CR7)	Y N N/A	
32. Butter/margarine is available only upon request. (CR7)	Y N N/A	
33. Lowfat condiments accompany fried foods instead of tartar sauce or other high fat sauces. (PS14)	Y N N/A	

CR = Criteria
MP = Menu Planning
PR = Procurement
PS = Preparation/Service

Standard Weight Record

School Name: Hoover Elementary **Meal:** B / L

School Number: 123-456-7890 **Date:** 11-9-93

COMPONENT/MENU ITEMS	WEIGHT OF PORTION IN GRAMS
Meat/Meat Alternate Weiner*	
Vegetable/Fruit Green Beans	
Vegetable/Fruit Peach Slices	
Bread/Bread Alternate Corn Dog Covering	
Milk Whole 2% Skim Chocolate	
Other	
Other * Corn Dog	

School Name: Hoover Elementary Meal: B/L

School Number: 123-456-7890 Date: 11-9-93

Observed Food Intake Form

COMPONENT/MENU ITEMS	WEIGHT OF WASTE IN GRAMS
Meat/Meat Alternate Weiner*	
Vegetable/Fruit Green Beans	
Vegetable/Fruit Peach Slices	
Bread/Bread Alternate Corn Dog Covering*	
Milk Whole 2% Skim Chocolate	
Other	
Other	

* Corn Dog

TEXAS

NET

NUTRITION EDUCATION & TRAINING

Funded by the
Nutrition Education and Training Program
PL 85-188

The Texas Department of Human Services NET Program is committed to assuring that program benefits are made available to all persons and provided to all eligible individuals without regard to race, color, national origin, age, sex, disability, political belief or religion. Any person who believes that he or she has been discriminated against in any NET Program activity should immediately contact the Administrator, Food and Nutrition Service, 3101 Park Center Drive, Alexandria, Virginia 22302.

TEXAS DEPARTMENT OF HUMAN SERVICES
1993